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THE CHILD'S MIND:

ITS GROWTH AND TRAINING

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THE CHILD'S MIND

ITS GROWTH AND TRAINING

BEING

A SHORT STUDY OF SOME PROCESSES OF LEARNING AND TEACHING

BY

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PREFACE

THE reasons for writing this book are sufficiently set forth in the introduction. It is not a treatise on psychology, still less a new and full-fledged theory of education. Nor, on the other hand, is it a complete handbook for teachers. It is rather an attempt to set forth in simple and, as far as possible, untechnical language some results already obtained from a study of mind growth as an organic process, and to establish a clear and definite connexion between those processes of learning which mind possesses, and the methods by which it should be taught and trained. These chapters will, it is hoped, enable the young teacher to use in practice the facts which he learns in his outline study of physiology and psychology, and provide the experienced teacher with a framework on to which he may fit the results of his experience without committing himself to any one philosophic system. Perhaps at a time when the problems of education are so widely discussed,

this restatement of old truths in a new light may prove of interest to an even wider circle of readers.

The thanks of the author are due to Dr. Arthur Robinson and to Mr. Herbert Ward for much kindly criticism and encouragement and many valuable hints.

W. E. U.

August, 1907.

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INTRODUCTION

Educational Theory needs revision because of advances in Biology, Physiology, and Psychology—Basis of present theories is either Herbartian or Froebelian philosophy, developed in ante-Evolution days—Revision necessarily partial and tentative—In view of unsolved problems, genetic method is adopted.

THERE is scarcely any branch of knowledge which, as one generation succeeds another, does not stand in need of constant revision. It is not merely that knowledge itself on all sides is constantly increasing, and that new discoveries in different sciences involve a recasting of the form in which the results of past inquiries have been cast; but society itself is constantly progressing (or, it may be, regressing), and finds itself face to face with new needs, which call for fresh inquiry and new expedients to meet them. Each generation is bound, in so far as its interests are alive and active, to review for itself, appropriate and assimilate in a form and from a point of view

most suited to itself, the store of information which past generations have handed down to it. Such revision is not, of course, uniform in all subjects, but is demanded now in one direction, now in another, according to the needs of a particular period. Though no science is completely exempt from the necessity of such revision, those sciences which are nearly connected with human conduct and society are far more exposed to it than relatively abstract sciences; and it may happen, and, indeed, has happened in recent times, that one thought or hypothesis arising in connexion with one particular science may so affect the general mental standpoint as to involve a recasting of many others. It is difficult, for example, to name any, apart from the mathematical sciences, which in our own day have not been so affected by the idea of Evolution. Most subject of all to such revision is the group of sciences called normative, which merely embody a system of facts, accepted as true, so arranged as to subserve some art. To this group Education, if we may speak of the Theory of Education as a science, belongs, and many considerations have recently combined to make a revision essential. On the one hand, the sciences upon which educational theory depends—Biology, Physiology, Psychology—have made great advances in late years; and, on the other hand, the rapid changes in social and economic environment have created a need for inquiry which is acknowledged in every grade of modern society.

The Theory of Education has been in the main dependent upon the philosophic systems of Herbart or Froebel, both of whom preceded the scientific development of the nineteenth century. An increasing number of writers have devoted enormous pains to presenting educational thought according to the Herbartian or the Froebelian view, whether in the explicit form of an historical or philosophic analysis of the framework of their systems, or as constituting a body of principles which are taken for granted, but neither defended nor explained. In some cases, even when their principles are disguised or disclaimed, their existence and validity is presupposed both in the tone and the terminology of the writing. Yet, if a doubtful adherence is accorded to the philosophic framework which in reality lies behind the subject-matter of a book, the subject-matter itself is discredited. In all such books, moreover, however logically consistent they may be, the leading ideas of Herbart and Froebel are rarely brought into clear connexion with those of the modern sciences, as they should be, if a theory of education is to have a secure foundation. On the other hand, we have a series of treatises, making no claim to be arranged according to a systematic structure, which crystallize the results of personal experience. These are sometimes upon teaching in general, more often upon the teaching of special subjects, and not seldom upon the more general topic of the function of the school and the training of character. Excellent in substance and

expression as such writings often are, their vagueness of terminology and lack of connecting threads render them difficult to grasp and easy to misinterpret. The reader often gains from them a stimulus in his work, and a valuable suggestion from some illuminating phrase, and should be so far grateful; but they do not provide the inquirer with the systematic body of facts or leading ideas in the light of which his past or future experience in teaching may be interpreted.

When inquiry is left in the hands of blind followers of Herbart or a few great psychologists who have never been schoolmasters, and schoolmasters who are satisfied with traditional methods and rely on inchoate experience, it is hardly to be wondered at that the Theory of Education does not get the revision of which it stands urgently in need.

But in the light of modern knowledge, this revision is not likely to be the work of any one hand, nor, indeed, of any one period; it is certain to demand a combination of the work of many writers spread over a considerable series of years. Any one attempt at so difficult a task is sure to be unripe, incomplete, and faulty in many ways. Moreover, a line of thought which may seem clear to one mind may easily fail to recommend itself to another. The difficulties to be surmounted are by no means insignificant. The sciences which ought to throw real light upon Education which include at least Biology, Physiology, and Psychology, are them-

selves rapidly progressive; in each there remain great fields of inquiry still unexplored, and each is, in one direction or another, a field where rival hypotheses contend with each other. They have, moreover, each of them their own scientific aims, and these are not in any case identical or even parallel with the aims of a Theory of Education. The light which they throw upon teaching is, from their own point of view, a sidelight. It is not any part of their function as sciences to throw light upon the problems of Education at all. We must therefore follow an eclectic method, and choose for ourselves the physiological or psychological data which we deem useful for Education. Here we are at once on debatable ground, for there is much difference of opinion as to what portions of their data can be made useful for the purpose of Education. No one, for example, who has any acquaintance with the numerous handbooks and treatises which aim at applying Psychology to Education will be inclined to underrate the difficulty of deciding what are the all-important data to be observed and what may wisely be neglected. There are such differences between the various writers who have attempted the task that a perusal of their works leaves the reader's mind in a state of chaotic uncertainty. It appears, indeed, hopeless to look for any unanimity on this point in the near future, and in consequence any treatment of the subject is likely to encounter more opposition than support.

At any rate, it is not sufficient for the purpose

of Education merely to collect and state facts drawn from these sciences which seem to be relevant. If anything approaching a consistent point of view is aimed at, the rays of light coming from the different sciences must be focussed, passed, as it were, through a common lens, in order that the light thrown may be cumulative and concentrated rather than sporadic. To this end one consideration is of the greatest help. The genetic method, which deals with the process of growth, is beyond all question that most likely to be fruitful for our purpose. Facts as to mind growth and its conditions cannot fail to be of use to any who profess to be trainers of mind. And, fortunately, in all the sciences with which we are concerned the genetic method has tended of recent years to become the favourite mode of exposition.

In the following chapters the genetic method has in the main been followed. No attempt is made to connect educational theory with any philosophical system, and hypotheses of a still disputed character are in the main avoided, though this is not possible in all cases. In the choice of vocabulary there is some departure from accepted usage, and this is owing to a desire for simplicity and clearness. Fine distinctions necessary in a scientific treatment of a subject are not necessary when the aim is not to build up any science, but to throw light upon the most difficult of all arts, and give a guidance not beyond the easy comprehension of those who have not had a special training in any one of the sciences

whose aid is called in. The reader accustomed to the current method of applying Psychology to Education will probably feel surprise, and possibly disappointment, at the absence of several favourite terms—*e.g.*, Memory, Concept, Interest, Apperception, Association. A critical and historical survey of recent educational thought would be necessary to justify fully their omission ; but such a task is beyond the scope of these pages. Some reasons for their absence will be found here and there in the course of the book, but the chief reason lies in the method adopted. In an attempt to study differing types of learning and their interconnexion, we are concerned with processes rather than products, with trains of thought rather than faculties, and many terms employed by analytic psychology or Herbartian theory are either too wide for our needs or else unnecessary.

CHAPTER I

THE BEARING OF BIOLOGY ON EDUCATIONAL THEORY

A. General Biological Facts: Interplay of organism and environment—Unsolved problems (*e.g.*, heredity set aside)—Organism strives to preserve old environment and adjust itself to new; failure to do either means death—Continuance of life presupposes adaptability — Function of consciousness in relation to the service of the organism. B. Exemplification of these Facts in Human Life: Man, as organism, amid complex environment has advantage of highly developed mental life and social instincts—Protection afforded and demands made by society—Primitive and modern society contrasted in this respect—Double environment of modern worker: sphere of labour and sphere of leisure. C. Bearing of Facts on Education: Education provides an artificial environment as training for wider environment of life—Primary conditions of success—Importance of wider sphere of leisure and social life—Dangers of premature growth.

A. GENERAL BIOLOGICAL FACTS.

THE relation between organism and environment, if adequate expression could be given to it, would sum up all that Biology has to say on the subject of Education.

We live in a world of organisms ranging from the minutest protozoa up to man, and each genus and

species has its own history, its own mode of life, its needs and demands upon its surroundings, upon which its very existence depends. We are not, of course, concerned with all the questions which Biology raises—not, for example, with the distinctions between one genus and another, still less with questions concerning the origin of genera or species. We are concerned with those general laws which are common to the whole range of animal organisms, for it is obvious that such laws will apply equally to man; and we shall find in them the widest generalizations which must inevitably remain true of all Education. It is not necessary, therefore, to deal with complicated questions of the origin of cell life, nor with rival hypotheses concerning the nature of inherited capacities, and the possibility of the transmission of acquired capacity. The latter is plainly a question which very nearly concerns education; but while it is still a disputed point among men of science, it is manifestly unwise to form educational theory on one solution of it or the other. The only course in such a case is to leave the matter altogether on one side.

Attention must be here confined, first, to those general facts true of all organisms in relation to their environment, and, secondly, to those peculiar organic characteristics which are special to man. Every living organism of which we have any knowledge is dependent from the very outset of its existence on preadaptation to environment. The living organism is never merely a passive element

moulded by circumstances as water moulds a stone. It always makes certain demands upon its environment, and it lives by reacting upon its environment. The very conditions which make its existence possible are those which are necessary to its growth. In order that reproduction or the birth of an organism may take place, a certain kind of environment must already prevail ; and as soon as it comes into being, the organism can only continue its life by exercising those modes of reaction which it possesses. To denote such inherited modes of reaction the term ' adaptation ' is here used. These are always of a twofold nature, manifesting themselves in strivings, conscious or unconscious, on the part of the organism, either, on the one hand, to ensure the continuance of an environment to which the organism is preadapted, or, on the other, to provide a new mode of response to a change in environment of such a nature that it cannot be avoided.

The former of these strivings may be called conservative strivings, the latter progressive strivings. The function of the one is to avoid change, to secure the continuation of conditions which suit the mode of reaction of the organism, and to ward off any threatening change. The function of the other is to meet an inevitable change by accommodation. In the exercise of these two functions, which every animal organism possesses, though different organisms in very different degrees, both the organism and the environment undergo a change, and the life of the organism, so long as it lasts, involves a

never-ceasing series of such changes. Every organism has a certain range of change in environment to which it can respond and on which it is dependent; but the moment the series of changes affecting it exceeds its limit of range its existence is imperilled. If such changes continue, its life is bound to dwindle, and if they be violent it perishes, as, indeed, hosts of organisms daily do perish, or rather die a violent death, and as in the past whole species have completely disappeared from the face of the earth.

We find, then, in all animal organisms, in the first place and at the outset of life, certain adaptations, inherited modes of reaction demanding a certain limited range of environment; secondly, a certain limited capacity of adaptation or adaptability; and, thirdly, new modes of reaction which develop in the course of the organism's growth, whether due to heredity or to contact with environment, or both. These acquired modes of reaction, to distinguish them from those with which the organism starts, we may call adjustments. The last two are not essentially different from each other, for the adjustments which the organism acquires are manifestly the result of its adaptability. But a distinction between them is necessary for our purpose.

In the course of their growth organisms develop instincts, and their behaviour progresses along lines of which there is no indication at birth, but which are, nevertheless, normal in their species. Thus, the grub becomes a chrysalis, and the chrysalis

a butterfly, and the ant takes its part in all the complicated life of its community. These are both instances of adjustment which shows itself in the course of growth; neither of them are adaptations, for considerable contact with environment is necessary for their appearance. And by using the term 'adjustment' to cover such normal developments, due, no doubt, to heredity, as well as others, due to the nature of the environment, without being hereditary tendencies, so far as is known, we avoid the complicated and difficult problem as to how far heredity extends, and how far environment is responsible. But the term adaptability must be understood, referring as it does always to the future, to mean simply the capacity which the organism possesses at any time or in any direction, normal to the species, or individual to the organism, to accommodate itself to a wider range of environment than its present one.

All these—adaptation, adjustment, and adaptability—are powers possessed by the organism, and the term 'power' will be used only as meaning capacity, actual or potential, of coping with a changing environment. The actual power of any organism is the sum total of its adaptations and adjustments at a given moment, and the potential power is the store of adaptability which it possesses. The higher organisms, if not all organisms, not only respond constantly to their environment, and exist by doing so, but are conscious of their environment and may be definitely conscious of the particular

responses which they make. As we have defined the term 'power,' such consciousness is manifestly an increase of power. It does not matter for our purpose whether consciousness accompanies only a certain complication of cell life, or is to be found throughout animal organisms; nor are we the least concerned with any question as to what animals possess consciousness and what, if any, do not. The point is merely this, that, whenever consciousness is present in any degree, reporting, as it does, however vaguely, changes in the organism and in the environment, it is manifestly of service to the organism, and, as enabling it to adjust itself more accurately to changes, an increase of power.

Conscious life may be supposed, in its earliest and least developed manifestations, to be little more than the vaguest sensibility, a vague, undifferentiated, but continuous whole, pleasant in character when the functioning of the organism is normal, changing to a disagreeable tinge when either the functioning itself is wrong, or when a change takes place in environment unsuited to the organism, and turning to pain at the presence of any attack upon the organism, or the appearance of any change which the conscious organism has come to regard as threatening danger. But it cannot be regarded as the function of consciousness to give the organism either pleasurable or painful feeling, for in that case, whenever painful feelings predominate or, indeed, recur, it would then become a question whether consciousness were worth having, and this

question always appears whenever the pleasure-pain aspect of consciousness is singled out from others as its main characteristic, and it usually leads to a pessimistic conclusion. The question here is rather what is the function of consciousness in the service of the organism of which it is a part. Even in its most primitive form it serves to give greater accuracy of response to environment, and to guide present responses according to the felt nature of the environment. It enables the organism to recognize previous aspects as they recur, and act according to the lesson of past experience. Without consciousness there can be no learning from experience. With consciousness the progressive and conservative strivings are capable of guidance in the attainment of their end.

If the most primitive form of conscious life may justly be regarded as an increase of power, it is obvious that the more conscious life develops, the greater are its possible services to the organism. Every new differentiation in consciousness is an increase in the possible span of environment to which the organism may in future adapt itself, and is accordingly an increase of power. In proportion as the vagueness of primitive consciousness gives place to ever-increasing determinations and differentiations, the adaptability of the organism is increased.

B. EXEMPLIFICATION OF THESE FACTS IN HUMAN LIFE.

The highest development in conscious organic life is to be found in man. But man does not possess more adaptations to fit him for the struggle of life than other organisms; on the contrary, many animals far exceed him in this respect. Of all the higher animals, he, at birth, is the most helpless, the most in need of the care and protection of others. At the best he never attains to a bodily strength comparable to many of the animals; and for all his great adaptability, for all the ingenuity in meeting difficulties of environment which his highly developed conscious life gives him, he would long ago have succumbed in the struggle for existence but for qualities hitherto not specified. These are the social instincts. Whether or not they are to be regarded as hereditary, they have exercised a preponderant influence on man's preservation and development, and have provided man with an environment, the progress and complication of which have been cumulative. Other members of the animal kingdom in plenty have their social life, but in man alone strength of social instinct has been combined with developed mental life. These two have given him his dominant position. Parental care by itself could never have saved the human offspring from destruction, but parental care has been supplemented by all the defensive and protective forces of society. However far back man's

history has been traced, he is still found to be a member of a society which, while it has moulded his qualities, and even determined the direction of his development, has also been his protection from destruction. The stage of civilization reached by any society might be fairly accurately gauged by the infant mortality prevalent in it.

From these considerations it is clear that the human offspring is born into an environment which in its simplest form is very complex. The helpless infant is dependent upon parental care, and this, again, to be effective, needs protection by the wider and more powerful forces of society. The former is a fairly stable element from the primitive to the advanced stages of racial development. It is an instinct rooted in the organism, and shared by other animal organisms far down in the animal kingdom. But the latter—the social force—is essentially of a varying and cumulative character. It is the result of the conscious adjustments of the past members of the society, who hand down to each succeeding generation an environment which has received the imprint of all previous strivings.

For the protection which it affords to the rising generation society demands a return—namely, that the rising generation should develop qualities of which the society as a body at that particular time has most need. For if it is true that society provides its offspring at birth with a narrow environment of a definite kind, it is equally true that society, as a whole, is itself face to face with a far

wider environment, which threatens it as a whole with dangers to be guarded against, and provides opportunities for further progress. The reaction of the social body upon this wider environment determines and defines the character of the qualities which society in its turn is destined to impose on the coming generation. In the case of any primitive society this is very evident, for there conditions are comparatively simple. Consider the conditions of life, for example, among the inhabitants of Great Britain at the beginning of the Christian era. The needs of the tribal society were food, clothing, and protection from attack by other tribes. Hence, society needed hunters, skin-curers, and warriors for its male members, while its women must cook, look after the simplest household, and care for the young. The pressing dangers of environment threatening such primitive society—*i.e.*, starvation, cold, wild animals, and hostile tribes—narrow down the directions in which such a society admits of growth within the most rigid limits. Members with qualities of a certain definite type are needed, the society must have them or perish, and accordingly the pursuits, aims, and interests of the rising generation are fixed.

There is room for the growth of intelligence and ingenuity—*i.e.*, for an elaboration of the mental adaptations of the young, but only in certain fixed directions. The force exerted by society is evidently intensely selective. Such a society has no use for members who do not possess the needed qualities.

Bards, indeed, it may admit to celebrate the traditions, the victories and defeats of the tribe, and priests, too, in a limited number, to utilize and play upon the vague superstitions and fears of a primitive mind in the interest of rulers. But these must be few. The vast majority must be hunters and warriors in the first place ; other adjustments may find place if the pressure of life finds opportunity for them. Those who in such conditions survive and prosper will necessarily be the brave, the physically strong and swift, and those loyal to the tribal traditions and interests. But the choice in the direction of growth left to the individual must of necessity be exceedingly small.

To these conditions, stated as they have been so simply as to be almost hypothetical, the manifold needs and complications of our modern society present a striking contrast. Our social community is enormously larger ; it stands, as a whole, in contact, actual and physical, with an environment which is world-wide, and in thought contact with one whose extent no single mind can compass. It admits of needs so numerous that it would be in vain to attempt to catalogue them. It is based upon the accumulated skill and intelligence of many generations exercised under ever-widening conditions, and it has open to its use all the accumulated knowledge of the world. It has behind it a long history—social, political, and economic—in the light of which alone its complicated structure can be interpreted.

Yet the young child of to-day is as helpless at birth as the child of primitive times. There is no evidence whatever to justify the assumption that his adaptations are greater; it is doubtful even whether his store of adaptability in any direction, physical or mental, is larger. The wonderful achievements in bygone ages of minds which escaped from the narrowing social pressure, and found, in some monastic establishment, leisure and opportunity to develop in a different direction from that possible in society, are evidence to the contrary. It is equally open to doubt whether, despite modern conditions, the normal physique has much altered. If, however, there is no ground for believing that the modern child possesses more either of adaptations or of adaptability than the child of the same race under more primitive conditions, we are forced to fall back on environment to account for the difference in the full-grown man.

But though our present society is so different from the primitive and tribal society, it is yet true that its demands upon the younger generation are none the less exacting. The needs, if more manifold, are none the less real and pressing.

Compared with the simple primitive society mentioned above, the chief distinction between the two environments appears at the outset to be this—in primitive society the practical needs are so simple and so pressing that next to no scope for choice is left to the individual, whereas in modern society the choice of direction of development is varied practi-

cally without limit. But the most superficial consideration of the structure of modern society shows that this is only the case in a very qualified sense, for the great majority of the members of the community. Consider, for example, unskilled labour, the lowest form of work demanded by society for its needs. In all probability, despite machinery, as much of it in proportion to population is needed to-day as in those primitive times, and the qualities necessary for it are the same as they ever were—a physique inured to bodily labour, a few combinations of muscular trains and infinite perseverance in directing them, and a certain amount of common sense, but of this, as oversight is more systematic, not so much as in those earlier days. Or turn to the lot of average hands engaged in manufacture ; labour is here so subdivided that the work of the individual is of a very monotonous character. The riveter fixes one rivet after another all day long by an almost unvaried repetition of a series of blows with his hammer ; the mill hand tends a machine which needs hour after hour exactly the same series of acts to keep it going ; and, *mutatis mutandis*, the same is true of the matchmaker, the silversmith, the potter, and not very much more varied is the lot of the average clerk.

In all these the demand is again for infinite perseverance and precise and swift dexterity in performing over and over again the same limited piece of work. In all, or nearly all, the lower grades of occupation—and it is in these that the majority of

the community must inevitably spend their working lives—the qualities wanted are regularity, perseverance, patience, and automatic dexterity confined to a narrow sphere. Men under such conditions cannot be said to live for their work ; on the contrary, they only work for their livelihood. A choice once made as to the particular trade a youth will follow, so far as work is concerned there is probably a narrower rather than a wider sphere of environment laid down for him than in earlier times. And it is one which is very little calculated to find out and develop his higher powers. It becomes by degrees tolerable because reaction in it becomes habitual, and by degrees almost automatic.

But when these lower grades of the community are considered, not in relation to the conditions of their work, but to those of their life, and of the duties and possibilities open to them in times of leisure, the contrast is striking. Besides duties towards the home circle, which are perennial, though, unfortunately, a tie of less strength now than in bygone days, each member of the community is at once part of an immediate social circle of friends and fellow-workers. Beyond this, again, he is at school in the throng of the streets, where thousands of his kind daily rub shoulders with him ; and it is acknowledged that the life of a large town is no mean school for quickening a man's wits. Finally, each grown man with a home is a citizen of the State, with responsibilities for the government of his town, and wider duties towards the State as a whole ; and

these open the gate to an endless field of ideas, in which he may find ample scope for whatever superfluous energy he has at his disposal when his day's work is done. A narrow and limited environment for work of a physically exhausting character, a wide and extremely varied and complex environment for leisure, is the lot of the majority of our citizens, and only the few and the strong are capable of making use of the opportunities offered by the latter. The great majority of our town population at present seek in their leisure some compensation for the monotony of their work, and find it too often in different forms of excitement, whether harmless or harmful; and forms in which they are passive rather than active are naturally the most popular.

The conditions which determine the nature of the work demanded from the great majority of our population are fixed by economic laws which are not under the control of the individual, and only in a very limited degree of the State. The State can, indeed, see that the surroundings of work are healthy, or, at any rate, not injurious to physical health, but it cannot change the monotony and narrowness of scope in the work itself. The qualities demanded from the workman by the nature of the work are beyond its control. The time may, indeed, come when all mechanical work will be done by inferior races, and the progressive races be left free for work of a higher character; but such a contingency is too far off, at any rate in our English society, to require consideration. Meantime, it

remains true that large masses of the population are destined to monotonous toil from a very early age, and it is scarcely to be wondered at that, as it is impossible to change its character, the workmen should seek to lessen its daily duration. The success which they meet with in this direction only enhances the importance of leisure, and the way in which leisure is spent. Hence, both from the point of view of the State and from the point of view of the individual, the well-being and progress of our citizens depends upon their capacity to use leisure well.

In biology it is a well-recognized law that any function of an organism for which environment does not find play tends from want of exercise to decay, and the law holds good for the highest functions of the most highly complex organisms as well as the organic functions of lower organisms. Unless a man's store of adaptability—under which term, of course, the highest of all qualities, mental initiative, is included—is exercised in some direction, it must inevitably become more and more difficult for him to exercise it. In the specialized industries the workers for long periods expend their energies upon routine work, consisting of ceaseless repetition of a very few adjustments ; and then, when the call comes for a new adjustment, the great majority are found wanting, and are accused of a lack of intelligence. If any trade had reached its perfect and final elaboration of production, such call would not come at all ; but under existing circumstances in almost every

trade the process of manufacture is liable to change owing to new inventions and improvements, and every such change involves a call upon the workmen to readjust themselves. The greater and more rapid the progress of industrial inventions, the greater must be the need for intelligence on the part of the workman who is to carry them out. A new machine, for example, is invented. The manufacturer has to appoint some among his hands to manage it, and, of course, he chooses those whom he judges as mostly likely to master its use speedily —those whom, in ordinary language, he thinks most intelligent. Thus, we meet the difficulty that, while the very sameness of daily routine discourages the growth of adaptability, the rapidity of new inventions and discoveries calls for its preservation.

It has already been pointed out that the majority of our population have, by our present social conditions, an environment imposed upon them which entails narrow and routine work, which, if men are to live, must be done. On the other hand, they have a family and social environment which offers endless opportunities for initiative and intelligence, and endless field for the play of their adaptability. But here the pressure of necessity is removed ; these are spheres in which they may or may not work, and partly from want of knowledge, partly from want of training, these are opportunities which are, for the most part, either neglected or misused. All workers whatsoever have this double environment

to face ; but where, as in some cases, the narrower sphere of work—the work which must be done—makes continual demands upon adaptability—where, that is, over and above the ever-recurrent routine, the worker is continually being brought face to face with situations which can only be met by new accommodations—his store of adaptability is kept constantly in exercise, and a habit of using his reserve of power is formed. Such a man is more likely to utilize the opportunities for effective work presented by the family and social environment, for he will carry with him into that wider environment the habit formed in the narrower one. There are, of course, exceptions to this rule, notably in the case of those whose whole energies are so absorbed in their definite sphere of work that they have neither time nor strength left for taking adequate part in the task of meeting social and state needs. No excuse is more common than this for the neglect of all duties outside a man's definite sphere of work. It is rarely a valid one, for we are far more prone to underrate than to overrate our capacity for work. Lack of energy is far more often due to misspent leisure than to the exhausting character of legitimate work.

C. BEARING OF THESE FACTS ON EDUCATION.

The foregoing considerations have a very important and direct bearing upon education. The school, whether primary or secondary, is intended

as a short-cut to prepare the pupil to take his place in the society to which he belongs. Whatever its organization, it creates an artificial environment, in which the pupil acquires a series of adjustments which are intended to enable him to respond more effectively to the demands which the wider environment of life will make upon him. The environment created by the school extends in the case of a boarding-school over three-quarters of the school life of the pupil; in the case of the day-school its demands are much more modest. But in both cases this environment is artificial in the sense that it brings the pupil face to face with a series of situations which he would never be called upon to face without it. By its environment the school undertakes to mould the pupil in directions demanded by the wider social conditions of the day. The pupil, on his side, at whatever age he enters the school, has a series of adaptations, physical and mental. He has already acquired in his life hitherto a series of adjustments. He has also a store of adaptability. In addition to his adaptations, he will in the course of his growth develop others, for the utilization and direction of which the school must, of course, provide as they appear. And, further, as the immature body and mind grow to maturity, the store of adaptability ought also to increase. This latter is by far the most important and most priceless power which the pupil possesses; and if the artificial environment of the school has such an effect upon it as to stunt its growth, or, what is ultimately the same

thing, fails to provide adequate opportunity for its use, whatever may be learnt at school would be better unlearnt, and the influence of the school must be wholly harmful. As soon as the obvious fact is recognized that the school withdraws pupils from one environment to place them in one which must be many removes more artificial, the responsibility resting on the school and those who organize it becomes apparent. There can be no justification for it, unless the environment of the school is better than that from which the pupils are withdrawn. Unless, for example, the boarding-school provides an environment better than the home life from which it withdraws its pupils, it cannot be justified. Unless, at that age when the sexual instincts of pupils develop, the school can find a means of guidance as salutary as that given by father or mother, it is again to be condemned for undertaking the full charge of pupils at such an age. Unless, also, the health of its pupils can be watched over at school with a care equal to that of the home, the school fails in its duty. These are only a few of the more obvious instances of the responsibility which rests upon the school, and many others will appear in the sequel.

The school does not undertake to prepare for life under any ideal conditions, but for life under the actual conditions in which the pupils will have to live, in so far as these can be gauged ; hence there can be no ideally best curriculum or school : both curriculum and discipline must be relative to some

extent to the times and places in which the pupils' lives are cast. It is unlikely that conditions best for Germany or for France will be best in England; or that a curriculum which served one generation will serve another without modification; or that an education suitable for a town child is equally suitable for the country child. If in any instance the contrary be asserted, the burden of proof must always lie with those who assert it.

A distinction has already been drawn between the narrower sphere of daily work or calling and the almost boundless sphere of social life. Education should, indeed, be a preparation for both. There is little danger of the former being neglected. As soon as that calling is even approximately fixed, there is only too great readiness to provide for its needs. They are, as a rule, definite and easily recognized—at least, superficially. There is, on the other hand, an increasing tendency to neglect and disparage an education which aims at preparing the pupil for the wider environment of social life. The results of this wider education are not such as can be easily tested by examination. Still less can their value be reduced to pounds, shillings, and pence; for all education which aims at giving instruction which has a commercial value is technical in its nature. The qualities which go to make a man an influential force in his day are not easy to analyse or appraise; they lie below the surface of acquired information; they mature slowly, and the progress of their growth is almost insensible. The wider education has for its

task the moulding of the deepest springs of conduct, the guiding of the aspiration towards lofty ideals, the cultivation and nurturing of widening interests, and the gradual formation of habits of conduct which shall protect the growing life from outside attack. These are qualities of which the home, the narrower sphere of work, and the widest sphere of society, have need ; and no school of any grade can escape from the duty of trying to cultivate them. The school, if it is to be of real value as a training for that wider environment, must be a school for character.

There is, however, a danger in regarding education exclusively as a preparation for life. Every period in the life of a growing organism has its own qualities, and its own perfections or failings, which are not those of the periods preceding and succeeding it. In impatience to produce the boy, it is only too possible to forget the child ; in eagerness to hurry the growth of manly qualities, to disregard the qualities proper to the boy. It is a failing to which English schools are especially prone, to hurry children out of their childhood, and boys and girls out of their boyhood and girlhood into the succeeding stage. Eagerness of teachers and parents for rapid progress, eagerness of children to be as their elders, both tend in this direction. Yet if the child is not permitted to act as a child, to think as a child, his boyhood must needs be bereft of some of its normal qualities, and his manhood become in some degree a stunted and a weakened

growth, compared to what it might have been. Precocity is far oftener a thing to be pitied than to be proud of. The blending of the characteristics of one period with those of the next, of childhood with boyhood or girlhood, and these in turn with manhood or womanhood, is one of the most difficult problems of education. Experience is a greater help here than theory, and little more can be said but that it is wiser to let things alone than to hurry. Individual pupils vary, probably, more in this respect than in any other ; the responsibilities, for example, of the discipline which in the upper parts of a school fall upon the shoulders of the older pupils may have a needed steadying effect upon one boy or girl, while their weight may be more than a temporary burden to another ; there are not a few sensitive and conscientious natures on whom its effect is permanently harmful.

CHAPTER II

THE MECHANISM OF LEARNING

Twofold bearing of Physiology on Education—(1) as determining conditions of health in school; (2) as giving an account of nerve process in which an explanation of conscious process is sought—Retentiveness of nervous system—Lower classes of nervous reaction—Hierarchy of processes; relation of higher nerve-centres to lower; inhibition and substitution—Progress and complexity of reactions dependent upon adaptability—How progress takes place—Influence of feeling in determining growth—Attitude of the educator towards feeling.

If all education means a response to a changing environment, it is manifest that both the nature of the environment and the nature of the organism require at least equal examination. Of the two, where man is concerned, the environment is cumulative, and undergoes constant change; whereas his organic structure, if it changes at all from one generation to another, changes extremely slowly, and the change is more likely to be one of deterioration than of improvement. In the present chapter we have to consider in especial the mechanism by which he responds to his environment, and the conditions upon which its normal functioning depends.

The physiology of nerve process has a twofold bearing upon educational theory. The one is somewhat vague and general, and has to do with the general conditions of the health and nurture of the growing organism. But it is, nevertheless, of extreme importance, because, although education is concerned with the growth of the higher functions—those, namely, which are consciously exercised—yet the whole organism is so sympathetic that no one of its functions can suffer without affecting all the others. The growth, if it is to be a healthy growth, must be harmonious. And in withdrawing children from one environment and placing them in another, the school cannot help affecting the whole of the children's natures. The environment which it creates must be the best both for physical and for mental growth. It cannot ultimately be good for either without being good for both, nor harmful to either without being harmful to both. The second relation of physiology to a theory of education is more restricted in character, and if of less immediate importance to the practical side of education, it is of greater importance to any theory. Taking for granted that all conditions necessary for the proper functioning of nerve process exist, the nervous process has yet laws of its own and qualities of its own which it is needful to consider, not because in themselves they are directly connected with educational theory, but because they are so intimately related to psychology, that its connexion with education would be quite

unintelligible if they were not first shortly considered.

The former of these two aspects, in which physiology is connected with education, we can only notice in passing; it is hardly germane to our purpose. With the latter it is necessary to deal in some detail.

Modern writers on education often speak as though the teacher ought to make an elaborate study of all the branches of the subject covered by the term 'human physiology.' Apart from the danger of overburdening the technical training demanded of the teacher, such a claim is open to objection. To understand thoroughly the physiological basis of school hygiene, it would be necessary to study the subject in at least as detailed a manner as the student preparing for the medical profession, and this is manifestly impossible. On such a matter as diet, important as it is to the head master of a boarding-school, he always has at hand the expert advice of a doctor, and would be foolish if he preferred in its stead his own imperfect empirical ideas. As to the heating, light, and ventilation of school buildings, if the existing school premises are unsatisfactory, an expert must again be consulted. All that the authorities can do is to see to it that they are not niggardly in following the advice given.* If

* This is too often the case, especially in the matter of heating. A whole school may be rendered unhealthy and uncomfortable because, for the sake of economy, an apparatus of power insufficient for the building is put in.

buildings are unsatisfactory in these respects, no amount of physiological knowledge on the part of the teaching staff can remedy the matter. If they are satisfactory, it does not need much knowledge of physiology to inspire a head master with the idea of placing a thermometer in each room, and having the temperature taken at stated intervals during the school day. Common sense will teach every teacher the importance of fresh air ; he knows perfectly well that his pupils can neither work nor attend in an atmosphere which has become fouled by repeated breathing. He can with very little difficulty get to understand the methods of ventilation adopted in his school. These matters present no difficulty to anyone of ordinary intelligence ; the whole difficulty lies in remembering to carry them out in daily practice. The head master's time is taken up with discipline, curriculum, and communication with parents, and his energies and attention are rightly centred on these subjects ; the teacher has in every hour in his class-room his definite piece of work to do ; hence often neither of them takes notice of the simple but fundamental matters of heating, lighting, and ventilation. In the press of other things which fill their minds, these things are exceedingly often neglected. Neither teacher nor pupils are conscious of the gradual exhaustion of fresh air in a class-room, and the harm is done before they become aware of it.

If short space can here be devoted to them, it is undeniable that these simple elements of school

hygiene are of fundamental importance. Some simple treatise, which should include chapters on Heating, Lighting, Ventilation, and the chief causes and signs of mental fatigue, might do invaluable service. It is undoubtedly here that the influence of outsiders can make itself most usefully felt in our secondary schools. These things at present, and probably, too, in the future, are so near at hand to the school staff that they are overlooked. They undoubtedly are far more carefully attended to in our primary schools—not, indeed, because of superior devotion or knowledge of the teachers, but because of frequent visits from managers and others, who realize their importance, while they are hardly able to pose as authorities on other school questions. If the managers should fail in this duty, there are the periodical visits of inspectors to keep those in control up to the mark. Secondary schools have, indeed, their governing bodies, but these imposing boards meet seldom, and too often stand aloof from the practical management of the school ; it is very rarely that they trouble to look into questions of school hygiene, unless some disastrous epidemic forces the matter on their attention. Yet they might do invaluable service by attending to these simple matters of common sense. Inspection either by the local or the central authority may do something to improve matters, but a small local body taking interest in the school and paying frequent visits to it would be far more efficacious. Meantime it cannot be doubted that a good many of the ill-

nesses which cause absence from school, a great deal of inattention and listlessness in school hours, and not a little of the shortsightedness so prevalent among scholars, can be directly traced to neglect on the part of the school authorities of the simplest rules of hygiene.

These are important in any school, but most important of all among young children ; and of all the obvious and simple truths which concern education, they are the most often forgotten and neglected both in the school and in the home.

In dealing with the second question—namely, the connexion of the physiology of nerve process with educational theory—it must be remembered that our aim is, in the main, to prepare the way for the psychological considerations which will later be discussed. Education has to deal with what goes on in the conscious life of the pupil ; and Physiology is not able at present to do more than suggest an explanation of these higher processes ; their analysis is not possible except by the aid of Psychology. Hence we have only to do with nerve process in so far as the growth of higher mental products is conditioned by it, and in so far as its laws throw light upon this higher growth. It is possible, therefore, to avoid the introduction of many technical terms, and it is not necessary or desirable to go into detail. It would, for example, make no difference to educational theory or practice if the pairs of spinal nerves were twenty-one instead of thirty-one. There is no occasion here, either, for such detailed description of

nerves and their parts, of cells and their structure, as may be found in the text-books of Physiology. On the other hand, there is no escaping from some consideration of the main functions and laws of the nervous system, because the whole trend of modern psychology is to seek in nerve process an explanation for conscious process. Psychology is based upon the fundamental hypothesis that whatever happens in consciousness has its counterpart in nerve process. Our conscious life is looked upon as being inseparably connected with what goes on in the cortex of the brain ; but the physiology of the brain is not sufficiently advanced to give more than a hypothetical account of the nerve process corresponding to any given state of consciousness. It is impossible, for example, to isolate certain nerve cells and fibres connected with them, and say these and no others are the counterpart of this feeling, this sensation, this percept.

Nerve processes in the brain, too complicated to be accurately analysed, are in their turn interpreted roughly in terms used in describing simpler nerve processes, in which cells and fibres with their functions can be more accurately investigated ; and consequently some understanding of lower and simpler nervous reaction is essential for any kind of interpretation of the higher and extremely complex brain processes. The brain's nervous processes are no more separate from the other nervous processes of the human frame than the feelings, sensations, or percepts spoken of above are separate from the total

state of consciousness in which they occur. Consciousness is one continuous whole, and the nervous system is one continuous whole. But the term 'continuity' does not apply to both in the same sense. The continuity of the nervous system is a continuity in time and space : for no single moment from birth to death can its activity wholly cease without the existence of the organism also ceasing ; but the continuity of consciousness is a continuity of meaning, not of time or space. Consciousness has no continuity of time ; it is subject to lapses of various lengths of time, and as possessing a continuity of meaning, it does not possess a continuity of this or that meaning, but of some meaning. No particular meaning possesses more than a transitory and broken life in consciousness ; and the nervous system must inevitably be regarded as the storehouse of possible revivals of meaning, and the conditions which make revivals possible are physiological. Thus, the most important and fundamental attribute of the nervous system is its retentiveness. It registers by some change in structure every stimulus received and every response made to a stimulus. It is, therefore, from the beginning of life to the end, undergoing a constant change, the direction, the nature, and the rate of which are dependent upon its reactions.

The nervous system is from the outset adapted to perform two great classes of reactions. The great mass of nerve centres and nerve fibres which regulate the circulation and breathing are ready to function

at birth. Throughout life the nature of the function remains unaltered ; the amount and possible strength of the functioning grows with the growing organism, and when the organism has attained its full growth, these masses of nerves do their work with little variation until the whole system begins to decay. These two are specialized and lasting functions upon which the nourishment of the whole nervous system depends, and their centres are known to have their seat in the spinal bulb.

The second class are the nerves and cells which control the digestive functions. These, again, are pre-adapted to their work, and their action, if not continuous, is rhythmical and periodic. Their capacity grows with the organism ; and they, too, have their definite limits of adaptation, and make their definite demands upon environment, given which their action continues, undergoing little change, throughout life ; that is to say, they have a very limited range of adaptability. So, too, with the delicate nervous mechanisms which control the other varied secretions of the body, which need not be mentioned in detail.

These vital and consolidated functions are found varying in degree of complexity throughout the whole range of organisms, and upon their healthiness and normality the whole of the rest of the nervous system depends for nurture. Although, owing to the intensely sympathetic character of the whole nervous system, they may be, and are, often influenced by the other parts, their influence upon the

remaining parts is more direct, continuous, and fundamental than the influence of these parts upon them. The vital functions continue their work, though at a slightly lower rate, when conscious life ceases, and the higher centres are dormant; any increase of nervous activity in any part of the nervous system involves an increased call upon them.

The next great class are those nerves and nerve centres which enable the organism to receive stimuli from environment, and react upon it by bodily motion. Interpreted in its widest sense, this class will include even the highest and most elaborate brain processes, though probably not all of them. For such processes may be regarded as either now coming between the receipt of some stimulus or combination of stimuli and the response to it or them, or as a revival of processes which in the past did so. But it includes a great deal more than these—reactions, namely, which belong to lower parts of the nervous system, which need not necessarily reach the brain at all, and are only partially under the control of the higher centres. As belonging to this class may be mentioned, first of all, reactions which can and do take place without the oversight of the higher centres. At the outset the whole of these are pre-adaptations; they are enabled through inherited capacities to respond to certain stimuli in a certain way—*e.g.*, the adjustment of the pupil of the eye to varying intensities of light, sneezing, coughing, and so on. But their number is perpetually being added to by adjust-

ments acquired in experience, which originally demand for their acquirement the full co-operation of the higher centres, but by degrees become so consolidated that they stand less and less in need of oversight, and finally can take place while the higher centres are engaged in dealing with other matters.

In the nervous system of any given individual there exist numbers of such adjustments, in various stages along a scale, at the top of which are those requiring the full aid of the highest centre, with correlatively intense concentration of consciousness, and the bottom those so completely consolidated as to need no guidance whatever, given their normal environment.

Each of these reactions, whether inherited or not, is performed by the co-operation of a number of nervous centres, with their connexions few or numerous in accordance with the length of the reaction itself. To all such reactions there are two sides —the sensory and motor. The sensory side includes all the organs of sense, whether specialized or not, with the nerve fibres which conduct the stimuli and the cells which receive them. The motor side includes all cells concerned with the discharge of nervous energy, and all nerve fibres which conduct the charge to the muscles, where it is transformed into muscular force or movement of one or other part of the body. Each reaction may therefore be said to have its own definite path in the nervous system, along which, whenever it takes place, nervous energy is expended. The essential and most vital

part of the system is the cell, and the nerve fibres, whether sensory or motor, are to be regarded as offshoots from it, whose function it is to conduct. The sensory organ is a special pre-adaptation to enable the cell to be fed with stimuli, and the muscles another special pre-adaptation to enable the energy of the cell to be expended in the service of the organism. In the human frame such paths exist in numbers at birth ready to function, and environment supplies them with the needed stimuli.

All movements whatsoever must be regarded as a response of the system to these stimuli. Apart from the great vital functions mentioned above, numbers of these are already specific, and adapted to a definite and restricted service—such, for example, as the contraction and expansion of one set of eye muscles to light, the action of the lips in sucking, of the throat in swallowing, the fingers in clutching, while the apparently random movements of limbs and body are responses to other stimuli, as yet as undifferentiated as are these movements themselves. Every shade of feeling has from the outset its more or less elaborate correlative upon both the motor and sensory side of the system. These lower but fundamental paths are all of them ready to function at the moment of birth, and are pre-adaptations.

In the case of the special organs of sense this is only partially the case. They are only very partially capable of receiving their stimuli at birth. Touch, the universal sense, is readier than the others,

for it has already been at school even prior to birth. Taste and smell are both capable of conducting stimuli, and the centres connected with these senses in the brain are thought to be the first to mature. Both these senses are so strongly protective to the organism that this is only what one might expect to be the case. It must, of course, be supposed that the consciousness of taste and smell is at first extremely vague and undifferentiated, and the motor response to it equally so; there is nothing more than a vague sense of pleasantness or unpleasantness, and the motor side is nothing more than an innervation, more or less marked, of those motor paths which are the physiological counterpart of pleasant or painful feelings. But, anyhow, connexions between these two senses are earlier than those between other senses, and an infant's earliest experiments are undertaken to form such connexions. The end organs of sight and hearing are at birth only partially adapted to their functions: the eye has to learn to follow a moving object, and it has at first no normal focus; the ear is at first incapable of reaction to loud stimuli or to very soft ones. Both these senses gradually widen their range of function, and conditions which supply exercise for such range of reaction, as they are at first capable of performing, are necessary for the full growth of the organism. The more delicate, complicated, and elaborate the end organ, the longer it is in reaching its full and normal development; hence organs of smell, taste, and touch are little exposed

to harm in earliest life : they are capable of dealing with such stimuli as they receive ; but the ear needs more care than they do, and the eye is far more exposed to damage than the ear. If the child is continually allowed to focus his eye on an object very close to it, such focus tends to become the normal one, and the child becomes shortsighted ; for at the outset, and for some years after infanthood has passed, it is as easy for the child's eye to focus an object close to it as one at a greater distance—a normal focus is only gradually fixed.

It is quite impossible for the sensory side of the nervous system to develop apart from the motor side, for there is no such thing as sensory stimulus without motor response ; hence there can be no distinction between sensory stimuli without a corresponding distinction in motor responses. It must in this relation be remembered that every new kind of motor response, apart from being a distinct result of a foregoing stimulus or stimuli, itself results in a further back-current of stimulus ; for there are afferent nerves in connexion with muscles and joints in every part of the body ; hence the currents of stimuli and responses run their course along a series of afferent and efferent paths through the system till they die away. When we think of the manifold stimuli which are constantly pouring in upon the organism from its environment, from its own vital functions, and its own movements, it becomes evident that cells and nerve fibres are constantly in vibration. Though activity is greatest

now here and now there, the system as a whole is never quiescent; every stimulus and every response involves some expenditure of nervous energy, and consequently expenditure and storage of energy are unceasingly going on. Sleep means for the nervous system, not complete quiescence, but a period when storage or recuperation of cells and nerves takes place faster than expenditure; and in proportion as the call for activity in any part of the system becomes more intense, the expenditure of energy becomes greater and greater than the storage. Of the nature of this energy with which the whole system must be supposed to be charged nothing whatever is so far known. It is described in terms borrowed from those used in speaking of such other kinds of energy as electricity or light, but such terms, when used of it, are of the nature of hypothesis.

It is evident, when the manifold activities of the nervous system are considered, that only a small number of them at any given time have their distinct counterpart in our conscious life, though in a vague and undifferentiated way they may all contribute some quotum to the vague background of feeling in consciousness. How far that is the case there are no means of knowing. But this mere fact in itself would lead us to expect some economy, some hierarchy of processes, in the nervous system, analogous to the economy which we know exists in consciousness. That such a hierarchy exists in the nervous system has already been indicated.

The vital functions have their own consolidated courses ; reflex actions belong to various specific lower centres ; feelings have their inherited motor paths. The special senses, again, have their connexions with portions of the cortex of the brain which have been at any rate roughly determined. Our conscious life is known to be somehow dependent upon what goes on in the cortex of the brain generally, though no specific centres in the cortex can be said at any moment to be the local physiological seat of consciousness. It is in the brain, and especially its cortex, that the highest directing and co-ordinating centres have their seat, and by the various afferent and efferent nerve fibres that run to it and from it down the spinal cord, the cortex is in connexion with all the lower centres. It is enabled to receive reports from them and to influence their action.

Experiments upon organisms less complicated than man have proved that the higher centres in the brain actually do, in the case of these lower organisms, exercise a check upon some of the lower reflexes. This literal controlling influence is a primary kind of inhibition, and presumably such primary inhibition is exercised by the human brain upon all lower functions. But as applied to the human brain, the term ' inhibition ' has a very much wider sense. Just as in the previous chapter we have seen that instincts and impulses as they develop are to be regarded as the material out of which all future conduct is to be built, so, expressed in

physiological terms, the inherited paths in the nervous system, the stimuli received by pre-adapted end organs, and the motor responses to them, whether definite or merely indefinite and apparently random movements of muscles, are to be looked upon as functionings out of which all future paths, however elaborate, must arise. The immediate and automatic response which is characteristic of the lower centres has to give place to a new response, for the provision of which co-operation of the higher centres is necessary ; and thus every step in advance, every new adjustment of the system to its environment, involves both an act of inhibition and an act of substitution, with the result that a new motor reaction takes the place of the inherited reactions. Sporadic and random movements tend more and more to give place to distinct and teleological movements, and the energy of the organism is more and more economically used to adapt the organism to a differentiated environment.

Differentiation of stimuli and differentiation of motor responses go hand in hand. The whole course of the development of the nervous system is from the vague and undifferentiated to the specific and distinct. Every step in advance means some new function acquired, and is a call upon the store of adaptability ; and the brain, with its countless cells, is to be regarded as the physiological seat of adaptability. Its special function is inhibition and substitution, the breaking up of old paths and the substitution for them of new paths.

It has been already noted that nervous energy tends to pass along the line of least resistance. How comes it, then, that a new path can be formed in the system at all ? Of course, it is an initial requisite that the nervous system should have a reserve of nervous energy and a store of unexhausted adaptability ; without these a new path would be impossible. The acquirement of any new response to environment demands an expenditure which is always greater than reaction along paths which have already become habitual.

It seems possible to classify the main ways in which new acquisitions arise under the following three headings :

(*a*) We must suppose that some old path is innervated in response to a stimulus mistaken for a familiar one, with results which are unexpected, and vary from mere shock to pain. For example, we may take the familiar and often analysed case of the child reaching out to grasp the flame of a candle as he would any other bright and attractive object ; or one still more common : the case of a person walking upstairs and pawing the air at the top of a flight, in unconscious anticipation of a further step to be climbed.

(*b*) Some new stimulus occurring is accompanied by a feeling tone of a novel and pleasant character, or else of a repellent and painful character, and the motor response to it is, in the former alternative, an attempt to repeat or continue the stimulus, in the latter an attempt to avoid its recurrence or protest

against it in some way. Such new stimulus may be provided by environment alone, or may arise out of some other response made by the system, specific or random. Numerous instances will occur to the reader in the region of every one of the senses.

(*c*) Some new impulse or instinct appears in the system itself, as the result of growth, which manifests itself physiologically in new and complex motor tendencies. Among animals, the ducklings, which, though reared by a hen, take to the water ; among children the impulse to collect ; and among all organisms the appearance of the sexual instincts—these will serve as illustrations.

In the strict sense of the term, the physiological standpoint has been abandoned under each of these headings. All of them, under one form or another, introduce feeling, and feeling is psychological. Any physiological explanation of it belongs to the region of hypothesis. A feeling can only be said from a physiological standpoint to mean the fact that certain nerve cells and their connecting nerves are innervated, with the added theory that, if the innervation is felt as pleasant, it is of a character that makes for the well-being of those cells or the organism—*i.e.*, that it is a case of anabolism—and that if the innervation is felt as painful, it is of a character prejudicial to those cells or to the organism —*i.e.*, a case of catabolism.

With the difficulties connected with such theories we have no concern. It is, however, important to notice that, whenever any new acquisition is made,

any old path inhibited, and a new path substituted, feeling, as such, plays a necessary and important part ; and since feeling must be conscious, the higher centres in the cortex of the brain must be called into play. Hence, if a path already formed in the system is to be interfered with—and this is a necessary condition of a new acquisition — there must be a feeling tone connected with its functioning sufficiently strong to vibrate upwards in the system, and bring the higher centres into play.

The old view of feeling as varying along a scale at one end of which is intense pleasure and the other end intense pain, with the problem as to whether there is a zero point in the scale in which it can neither be said to be pleasurable nor painful, has of recent years been losing ground, and has given place to a threefold scale of variation : the first being the pleasure-pain scale, the second an excitement-depression scale, and the third a tension-relief scale. Feelings may belong purely to any one of these scales, in which case they are simple, or may be composed of varying proportions of any two or all three, in which case they are complex.

It is not necessary to commit ourselves to these classifications as valid, or to discuss the question as to whether the latter classification is ultimate, for to whatever scale a feeling belongs, if it is intense at either extremity, though it rouses the higher centres, it does so with a stimulus so violent as to incapacitate them from performing their function. The response of such a feeling is a violent disturbance

of all the functions of the system, and if any more specific response is to be found, this can only take place when the immediate shock has subsided. Those feelings in any scale strong enough to call the higher centres into play *without violent disturbance* are those most useful to the organism.

Just because the whole subject of the feelings is so difficult a problem, so debatable a field of inquiry, writers on the theory of education are in the habit of either neglecting it altogether or of extolling the educational value of pleasurable feelings at the expense of painful ones. Interest, for example, is at least a form of feeling, and the Herbartian theory of interest does not admit the possibility of a painful interest, although the common uses of language and ordinary experience certainly assert the existence of such interest.

But unless inquiry is restricted to an altogether abstract and limited sphere, the influence of the feelings on mind growth is far too strong to be ignored. The view here taken includes not only human organisms, but all the higher animal organisms, and from that standpoint, if it is necessary to apportion the relative importance of one of the scales of feeling—the pleasure-pain influence—pain has probably been a far more potent element in development than pleasure. Pain is a signal to the organism of a situation with which its ordinary responses cannot cope ; it is the alarm which calls into play latent energy and reserve of adaptability. The violent and apparently random movements by

which an animal of less adaptability than man responds to it is ample proof of this ; and often these random movements happen upon a response which is the right one. There is a fund of laziness in all organisms ; reaction along the line of an already practised path is always the easier alternative. Pain is one signal that an old response will not answer ; the organism must find a new one or suffer. Unless it exceeds a certain intensity it is the form of feeling most certain to bring the adaptability of the organism into play, and the organism can only advance to a higher stage of development by using what reserve of adaptability it possesses. It may, indeed, be true that in the higher regions of mind growth the elements of pain connected with progress and effort are so manifold and inevitable that the educator should concern himself chiefly with minimizing them, but that is a very different matter from ignoring the educative value of pain.

CHAPTER III

MIND'S MAIN CHARACTERISTICS AND EARLY PRODUCTS

What kind of psychology does the educator need?—Outstanding aspects of consciousness, especially its selectiveness—Training of will as an end in education—Mind's early products illustrated—Sensation—Percept—Idea.

QUITE apart from any evidence which consciousness supplies introspectively, it is impossible to escape from regarding the functions of the nervous system as teleological. Every new differentiation arises from adaptation to meet a change in environment, and its value to the organism depends on its success in meeting it. This teleological character has been implied in the whole of the terminology used in describing the function of the nervous system; without it the terms 'development,' 'function,' 'adaptation,' 'stimulus,' 'response,' etc., would be meaningless. If consciousness is rightly regarded as being in some unknown way related to the nervous activities of the cortex of the brain, one would expect consciousness itself to bear evidence of its teleological character. Purpose felt as such in vary-

ing degrees of intensity should be its fundamental characteristic. The more active, clear, and intense the consciousness, the more definite should be its purposive character. Conscious life merely as such, merely because, whatever else it means, it involves an awareness more or less definite of what is going on in environment, and of the organism's own reactions on environment, is to be regarded as an increase of power, as enabling the organism to attain to more accurate and differentiated adjustment. Our brief study of the characteristics of the nervous system has shown that there is a hierarchy among nervous processes. At the lower end are those consolidated reactions which direct the vital functions ; next come inherited reactions appearing at birth, reactions at first of a reflex character ; next, instincts and impulses which appear in the system in the course of its normal growth ; and, lastly, the unending series of new adaptations which the system acquires. These last grow out of those previously mentioned, in proportion as the higher brain centres exercise their special functions of inhibition and substitution. Is there on the conscious side of mind any series of differing levels of conscious process ? Can conscious process take place either at a low or high level ? Does mind grow in power by the exercise of the higher level ? Does it stagnate or tend to decay if the lower levels are allowed permanently to prevail ? If these questions are to be answered in the affirmative, it is of paramount importance to the educator to know how to dis-

tinguish the lower from the higher levels ; to know, further, how the capacity of exercising mind process on the higher level is acquired, and by what stages it is evolved from the low level which exists at the outset, and is liable to recur at any time ; what kinds of environment are most likely to encourage the growth of the higher process. Such are the first questions which the educator must put to the psychologist. The use of psychology to him depends upon their answer.

The educator is concerned at every stage of his attempts to teach with minds which are individual, indivisible. The pupil's consciousness cannot be split up into parts and treated separately. Each mind has characteristics and activities of its own which it is continuously exercising. The teacher cannot stop it and examine it like a piece of machinery. All this is transparently obvious, but at the same time it is important as determining the kind of psychology which the teacher wants. Psychology as a science does not exist to supply his wants. It has its own ends and purposes to pursue, and is perfectly justified in employing methods best calculated to attain them ; but it is hardly surprising if many of its methods are not those which the educator needs for his purposes. There are whole fields of psychological investigation of the greatest interest to psychology as a science which have no bearing on education. The psychologist, for instance, is continually treating mental phenomena as though they were separate from the organic

mind ; he treats of sensation apart, of percepts apart, of emotions apart, and so forth. Such method, necessary if the purpose be a classification of mental phenomena, is of little or no value to a theory of education, for all these things are abstractions, and education has not to deal with abstractions, but with the living and active mind, in which cognition, feeling, and conation are inseparably blended.

The psychologist, again, is concerned with inquiry into questions of how we come to cast our experience into the forms of space and time ; the mere fact that we do so is sufficient for the teacher. The psychologist often attempts, on an analogy with chemistry, to arrive at a series of mental phenomena which he regards as irreducible elements, out of whose combination other mental products arise ; or, again, he may be chiefly concerned with investigating the physiological correlatives of mental phenomena, and neither of these lines of investigation concern the teacher. These are merely illustrations of differences which are bound to exist when the point of view and purpose of the two are so different. The educator is, in the first place, concerned with the process of learning and the conditions best suited to it, and in the second with the meaning of the term ' character ' and the best means of training it ; and he is perfectly justified in treating psychological data from the point of view most suited to his purposes, and need not concern himself if this does not exactly correspond to the trend of

psychology as a science. He must insist on a standpoint which will enable him to look on mind as an organic whole.

Wherever consciousness exists in connexion with a nervous system, whether in the higher or lower scale of organisms, it has certain fundamental characteristics. These have been frequently noted by psychologists, and have been stated with special clearness by Professor James in his 'Talks to Teachers.' These must be briefly summarized here, though it is not necessary to explain them in detail. For that purpose the reader is referred to Professor James's book.

They are as follows : Consciousness is isolated and individual ; it belongs to one individual only, and cannot by any manner of means be transferred to another individual. Within its field there is an ever-changing flow of content ; the same state of consciousness, once past, can never recur. If elements of its content appear to recur, they receive from their setting a change which makes them in a strict sense new products. At the same time there are no gaps in consciousness ; through it all runs a thread of continuity. Mind process may take place at differing levels of activity, and may have at one moment a content different *toto cœlo* from its content at another moment, but it is always the process of one and the same mind. Further, every state of consciousness is objective, engaged on data other than itself. Even if the consciousness be of a kind so advanced as to be capable of intro-

spection, yet it can never observe its own immediate activity. In the very act of attempting to do so the centre of its activity is changed, and the object or objects which it finds itself observing are the results of an activity which has passed. And, lastly, within the field and area of consciousness there is always one region relatively clearer than others ; there is always a centre point and focus somewhere in comparison to which the remainder of the field shades down into blurred obscurity. The focus or centre point is constantly varying, and the attitude of consciousness is at once retrospective and expectant—retrospective inasmuch as a former centre is sinking into the background, or expectant of the new centre which is forming. The fact that besides the focus there is always a background, and that centre and background are continually varying, gives to consciousness a selective character ; centre and background might always be other than they are. Probably this selective character is present even in the most primitive form of consciousness, but the more complex and manifold the stimuli which consciousness is capable of receiving, distinguishing, and responding to, the more pronounced becomes its selective character. In all higher ranges of mind process this selectiveness becomes a conscious and definite purpose to attend to this element and neglect that of the manifold possibilities of attention.

If it be true that, in proportion as mind growth takes place, selectiveness gradually develops into

conscious purpose, then this characteristic of mind will become of far greater importance to the educator than all others put together, for purpose is inseparable from will. The aim of education is the cultivation of will — not will as some abstract and metaphysical faculty predicated of mind from the outset *a priori*, but will in a concrete sense as the growing power of effectively dealing with varying situations. But it will not be necessary to provide some special curriculum or discipline the end of which is the production of will. Whatsoever in any way contributes towards mind growth must *ipso facto* contribute towards the cultivation of will ; and in that case not all knowledge will contribute to this end, but only such knowledge as is of use in the direction and carrying out of purposes. The young child, from this point of view, must not be regarded as possessing a will from the outset : he only has a mind, of the growth of which, if it be properly trained, and if it is led to exercise its higher functions, will may be the outcome.

The guidance of mind growth, or the cultivation of will—for the two are ultimately the same—is one end of education ; but by itself it is an altogether inadequate and one-sided end. The purposes in which will manifests itself have each of them an end which they aim at achieving. And each of these ends is judged as being good or bad according to its effect on the individual who purposes or on his immediate or remoter environment.

To cultivate strength of will without at the same

time providing such influences in environment, such discipline and instruction, as shall surround the growing mind with what is good, and aid the growing impulses to attach themselves to the good, and build up ideals of conduct in harmony with what is good, would be detrimental and cruel to the individual, besides being dangerous both to society and the State. The accomplished criminal possesses an educated mind if strength of will is the aim of education. Guidance of will towards good is an end more indispensable to education, whether for the sake of the individual or of society, than the cultivation of strength. For in each individual there is a limit, fixed by nature and inheritance, to the degree of strength of mind to which he can attain, but there is no limit to his capacity for using such strength of mind as he has for good purposes.

The term 'strength of will,' or, as it would be more in accord with the terminology hitherto used to call it, 'power of mind,' is here used with a meaning which the remainder of this inquiry will gradually fill in. For the present we shall be concerned in investigating that meaning in such light as can be drawn from psychology. If we distinguish, as is usually done in speaking of education, between curriculum, subjects and methods of teaching on the one hand, and discipline on the other, we shall here, in the main, be concerned with the former, and only indirectly with the latter. Later we shall have to take up the ethical side of education, which includes all the influences which the school can

bring to bear upon the guidance of will towards the good ; and there we shall be primarily concerned with discipline and with a few subjects taught, but only indirectly with all the rest, for goodness of will is not a quality which admits to any great extent of being taught directly.

It would seem at first sight to be a more logical proceeding to speak of mental processes before speaking of mental products, but it will, nevertheless, serve to smooth our path to get some idea of the latter first. The products of which we speak are on the cognitive side of mind—sensations, percepts, and ideas. Sensation is the lowest possible form of mental product. It is the conscious counterpart of a stimulus received by any of the senses, internal or external, of a strength sufficient to reach the higher cortical cells. It involves, on the mental side, a mere awareness, which has not got so far as to be an awareness of an object of any kind. A sensation may have any kind or combinations of kinds of feeling tone in the different scales of feeling mentioned in the last chapter, but such feeling tone is not separated from the sensation, not itself analysed ; and if the feeling tone is distinguished as such, it is merely because it forms a contrast with the tone of the state of consciousness which preceded it. If there were no such contrast, one sensation would not at this low stage be distinguished from another at all. Now, there is no known nervous system so simple as to be able to conduct only one stimulus at a time. In the

human system the receipt of stimuli and response to them are continual and unbroken ; on the physiological side with many of them concurrence and sequence are unbroken even in sleep. At the same moment stimuli are pouring in upon the system from all the senses, but that does not in the least mean that for each separate stimulus there is a separate awareness or sensation. There cannot be more than one mere awareness in consciousness, and hence it is usual to regard the various stimuli as blending to form one awareness with its own quality of tone. It is probable that there are organisms low down in the scale whose conscious life never rises above this continuance of awareness distinguished only by quality of tone. It is possible that there are states of human consciousness in very early life and under certain conditions at any stage in life—*e.g.*, on awaking from sleep, or when some violent stimulus upsets other mental functionings—which very nearly approach the level of pure sensation. But human consciousness certainly, and, so far as we can infer, most animal consciousness, if it occasionally touches so low a point, remains there only for a moment. As a rule, higher processes supervene and higher conscious products are present. Yet the sensational element does not wholly disappear. Wherever conscious functioning rises above mere awareness it will be found that there is a focus more or less distinct in the field of consciousness in or near which the higher products find place ; while away from the focus, in that dim

background where consciousness fades into the unconscious, the mere awareness with its feeling tone still persists. What set of stimuli received are its physiological counterpart it is impossible to say. They vary continually, according to the state of the higher centres and in proportion as they exercise more or less inhibition. At one moment it may be due to the vital functions, at another to stimuli from any of the special senses, at another to both of these, or even none of these. The nervous system is far too complex to admit of analysis so close as to answer such a question, while the background of consciousness hardly admits of examination by introspection. But the point to be insisted on is this : that sensation as a mental product does not disappear altogether from consciousness when higher products than sensation are present.

Let it, then, be noted that the fact that a set of physiological phenomena may have a conscious counterpart is assumed. No attempt is made, or can be made, to explain it. The sensation belongs to conscious phenomena, the stimulus which is its counterpart belongs to physiological phenomena, and the two orders are wholly distinct from each other. It would be the grossest fallacy possible to imagine that, because the two are correlative, they therefore in any way resemble each other. It is throughout assumed that all conscious phenomena have their counterpart in physiological phenomena, though only some of the latter have conscious correlatives, and a set of nerve processes may at one

time have a conscious counterpart and at another not appear in consciousness in any distinguishable form at all.

The mental product next above the sensation is the percept. The percept is a product higher than sensation in this sense, that no consciousness can possibly have a percept without previously being capable of having a sensation. Percept grows out of a further elaboration of that awareness and feeling tone which are characteristic of the sensation. We are not here concerned with the process or processes by which percept results from sensational elements, but the percept has a character in addition to the mere awareness and feeling tone of the sensation. It involves awareness of an object present in space and time. Some part of the whole content of consciousness is brought into greater prominence than the remainder, and that part is first objectified and then localized. If a new touch stimulus of sufficient strength to reach the higher nervous centres were added to a consciousness incapable of rising above a level of sensation, the result in consciousness might be a change in the nature of feeling tone of that consciousness, consciously distinguished as a change, but no more; but in a consciousness capable of forming percepts, given the necessary condition of the higher centres, the sensation would turn into an awareness of some part of the body touched now. Similarly with other senses, the percept might be of a limb moved, of an object seen, of a sound heard, etc. Thus,

when a mind can form percepts, it has the capacity of splitting up its total field of consciousness into parts, and the stimuli which it receives do not give rise to a conscious counterpart which is a mere awareness without parts ; but one part or another may split off or emerge from the whole and become relatively more distinct : for in proportion as one part gains in distinctness the remainder loses. In becoming distinct this part is objectified and placed in time and space.

Now, the stimuli which we receive and the objects with which our senses bring us into contact, as well as our own movements, any of which may have its conscious counterpart—for it is always in its turn a new stimulus—recur in our experience ; the stimuli of the different senses, though they may differ from each other in intensity, resemble each other as belonging to the different senses, and their conscious correlatives resemble each other also, though in all other respects they are not like the physiological stimuli which produce them. Thus, a dog may receive certain stimuli and become conscious of a certain smell ; the next day he may come across the same smell, and so on again and again. The percepts of smell resemble one another ; his percepts recur, and if they do so often enough they begin to him to have meaning. They are not only objects in space and time each time they recur, but they are the same objects as he met with before, and thus the recurring percepts tend to acquire meaning without thereby rising as

mental products into anything more than percepts. Hence, the forming of percepts is the first step towards the acquirement of meaning, and meaning is only possible because we have an environment certain parts of which are recurrent. Here, in the acquirement of meaning, we have the first and lowest form of learning. At this point we only note it as a fact ; later, in speaking of processes, we shall have to get from psychology all the light we can upon the reason for it and conditions of it. Here we cannot do so, for we are dealing with percepts merely as products.

If a mind is capable of forming percepts and no higher products, its meanings may indeed grow slowly, but these will be inseparable from the percepts. Such minds can only think of the meaning of a sound, a taste, or a touch, when that sound, taste, or touch are actually present. Meaning and percept are tied together, and the meaning has to wait upon the recurrence of the percept. The percept is always individual. It is this percept here present and no other ; and consequently the meaning is always individual. It applies to this percept here present, and can have no application beyond it. When the percept fades from consciousness, the meaning fades with it. If the feeling tone of the percept with its meaning, when present, was pleasant or in any way desirable, there may be regret for its loss, and both desire and effort to reproduce it ; but the meaning cannot revive until the actual percept is also brought back into consciousness.

The mental product next above the percept is the idea, and the idea is higher than the percept in just the same sense as a percept is higher than a sensation. No onsciousness not capable of elaborating percepts could ever attain to an idea, and by far the greater number of organisms do not possess sufficient mental capacity to elaborate ideas. It is open to question whether any mind as we know minds, except the human mind, is so capable. In order to form a percept the mind must be able to separate one part of its content and dwell separately on that part, and in doing so its awareness of that part becomes the awareness of an object in space and time, and owing to its recurrence in consciousness, this part—namely, the percept—comes to have a meaning. In order to form an idea, this part, already distinguishable from the remaining total of consciousness, has to split up and to be further distinguished. The meaning of the percept must become distinguishable from the percept itself. While the mind remains at a perceptual level, meaning and percept are tied ; when the mind can rise to an ideational level, the meaning is freed from the individual percept to which it was before attached.

An illustration may make this clearer. Let us take an instance from a mind working only at a perceptual level. Suppose a crumb of bread is thrown into a glass jar of water containing a goldfish. The goldfish sees the bread, rises to the surface, and swallows it. Let us fix attention on the state of the

mind of the goldfish. The fish may be hungry, and the hunger is felt consciously as a vague want, an expectancy and watchfulness for food ; but there rises no mental picture of the food, though the fish have often fed before. Suddenly comes a new element into consciousness—the conscious counterpart of the stimuli of the eye caused by the bread falling into the water. This new element breaks away from the other mental content as distinct, and means for the goldfish 'food,' and the meaning is expressed by the goldfish's subsequent proceeding. The food is an object in space and time for the fish, and has its meaning, because food has recurred before in its experience ; but when the food is eaten, both percept and meaning disappear. The object, food, has disappeared literally ; the percept, food and its meaning, have disappeared mentally, and in their place is the feeling of satisfaction of having fed, and perhaps a vague desire to feed again ; but the meaning, 'food,' cannot occur again in the fish's consciousness till some new percept brings it back, and even then it will not be noticed unless the fish happens to need the food. This is an instance of percept and meaning tied.

In contrast to it let us suppose a young child in a similar position. The child is hungry, and the hunger is felt as a want, but with the want in this case there rises in the child's mind a meaning, not of the want merely, but of something which will satisfy it—namely, the meaning 'food.' This in the child mind is an idea. Its form need not be

very clear; it may be no more than the vaguest mental picturing of 'bottle,' for the bottle has occurred before in his experience with the meaning 'food' attached to it. The child has risen to a higher level than the fish. In his previous experience the meaning 'food' has floated off from the percept 'bottle,' and is no longer attached solely to it. The meaning 'bottle,' as food, can occur to the child's consciousness before the bottle appears: it has not to await upon its percept. Before the percept appears the child knows the fact that he wants, and the thing which he wants, and his consciousness more or less clearly anticipates his experience; whereas in the case of the fish there is only a consciousness that it wants, but no mental picture at all of what it wants.*

Representing the difference by the use of symbols, let *a* be the percept 'food' and *b* be its meaning. Both with the child and with the fish, when the food appears, there is an *a* and a *b*, and they are in consciousness together as *a b*, but with the child the *b* has already separated from the *a* and attached itself to a third element—the want—and in the case of the fish it has not and cannot. The *b* has to wait upon *a* before it can recur in con-

* It is possible that some of the higher animals are not absolutely restricted to perceptual process pure and simple. There may be a product intermediate between the percept and the idea. Many psychologists have thought so, and use the term 'recept' to describe such products. The distinction is too fine for our purpose, even though to a psychologist it may be very important.

sciousness. It is important to notice that *b*, the meaning in the child's case, though it can recur when *a* is not there, is still attached to something —viz., in this case the want. There is no such thing as an idea which is attached to nothing. A free idea will not mean one which has no attachment, no perceptual prop, but one which has many. This will become clearer in the sequel.

There is much more to be learnt from these two simple illustrations than has here been stated, but we are here dealing with mental products only, and cannot consider processes. Our purpose has been to make it clear how even the most elementary form of idea differs from a percept. The child very early in life develops the capacity for forming ideas, and they undergo unceasing further elaboration; for the capacity is there from the outset, when education in the narrower sense has not begun. There are, of course, mental products higher than such elementary ideas, but their treatment and explanation must be left over.

One fact, however, of the greatest importance to any theory of education has already come to light. Each organic mind has its own natural limit of upward intellectual growth, beyond which not even the most scientific education can lead it. If the mind in the natural course of its growth does not develop a capacity for forming percepts, no education can raise its consciousness beyond a sensational level; and if it does not develop a capacity for forming ideas, no education can ever lead it to form them.

What education of a goldfish could raise it to an ideational level? Education can never produce any mental product new in kind; it can only use processes which the mind already possesses, for the acquirement, at as high a level as the mind is naturally capable of using, of new mental content. Education creates nothing; it merely guides processes which are the mind's own possession.

This thought gives rise to many difficulties. How is it, for example, that some species should be capable of so little growth, and one species—man—have inherited so great a capacity for mental growth? May not other species extend their range? If not, how did man gradually develop his wider range? All such questions, despite their philosophic interest, lie altogether outside the scope of a modest and practical theory of education.

CHAPTER IV

LOWER PROCESSES OF LEARNING

How these concern the teacher—Unconscious process and its function—Sensational process as a mental level; some conditions conducive to it—Perceptual process and the type of learning which it produces—Attention in relation to it—Growth of meaning in perceptual process, its character and limits—Retentiveness—The law of habit—Use of the term 'association'—Importance of muscular responses in perceptual growth.

HAVING reached some idea of the products, we may now turn to the processes. By the term ' mental process ' is meant all receipt of stimuli from environment and all responses to them which take place under the direction of a mind capable of producing a certain mental product. To each of the products considered in the last chapter there corresponds a process. A mind only capable of sensations still responds to stimuli, and does so in sensational process. A mind that cannot rise above percepts may yet be capable of most complicated responses to environment, but they take place either in sensational or perceptual process. A mind which can form ideas is capable of responses more elaborate still,

and its responses take place either in sensational, or perceptual, or ideational process. The lower process in each case does not disappear from a mind because it is capable of response on a higher level.

Our consideration of products in the last chapter took us no further than the most elementary form of idea. There are mental products higher than such elementary ideas, and there is a higher process than ideational process, but we are not as yet concerned with it. We are, however, concerned, besides those mentioned, with a process which finds no counterpart in consciousness at all—which, that is, is purely physiological, and which lies lower even than sensational process. Thus, starting from the lowest and proceeding up, we have (1) unconscious, (2) sensational, (3) perceptual, and (4) ideational process ; and the activity of mind in responding to its environment may take place either in the highest process of which that mind is capable, or in any of the processes below it.

It may be well at the outset to meet an objection which is sure sooner or later to be raised. What, it may be asked, can the educator have to do with these low forms of process ? Why not start with ideational process and omit the rest ? The answer is this : The educator is concerned with them because even the highest mind uses them all, and must continually do so. It is true that, if he wishes to educate, he must somehow get the mind which he is training to use its highest process ; but how can he tell whether or not the higher process is being

used unless he can distinguish it from a lower ? and how is that possible if he does not know the signs and conditions of these lower processes ? The teacher is always prone to judge of a mind's progress by the amount of learning that the pupil has gained, and forgets that learning is possible in a lower process as well as in a higher ; but if a lower is used when a higher might and should be used, the process of learning does not educate, and the things learnt are of no practical use. Moreover, without some idea of the nature of the lower processes it is impossible to understand the economy of mind and the nature of its growth. It is true that the teacher need not concern himself with lower process in the spirit of detailed scientific inquiry that it becomes the psychologist to apply. No more is needed than an indication sufficient to understand their proper uses and recognize them.

With the lowest of all, physiological and unconscious process, we have already dealt, and its characteristic is immediate response to stimuli received by lower centres along paths already well worn in the system. These at the outset are few and inherited, including the reflex actions and the vital functions ; but they are constantly added to, as life goes on, by series of muscular adjustments, which follow one another at a given stimulus in well-consolidated trains. They have needed a conscious process for their acquisition, but consciousness is no longer necessary for their guidance, though it may be necessary to initiate them. Conscious pro-

cess may meantime be going on and engaged on quite different data. When one is out for a walk the lower centres look after the walking, while the conscious mind is bent on other matters. When one wishes to write, the pen is taken in hand and dipped in the ink quite unconsciously, and so on. There are parts of almost every habitual action which are so welded together in sequence that no conscious process is needed for their supervision. This unconscious process is the greatest possible aid to progress, for it involves the least possible expenditure of energy in the performance of necessary and habitual actions, and leaves the field of consciousness free to deal with other matters. The greater the power of a mind and the higher the process at which it is capable of working, the greater will be the number and the longer the series of acts which are left to the supervision of the lower centres without ever rising into consciousness. If, however, their smooth performance receives a check from environment, the unconscious process is no longer able to deal with them, and it may need the highest process of which the mind is capable to remove the obstacle.

Sensational process concerns us little. There are probably numbers of the lower organisms whose consciousness is unable to rise above it, and their conscious experience can be no more than a blurred awareness with a varying feeling tone. They may respond to a complicated environment, but their trains of adjusted movements in response to stimuli

are either inherited or appear in succession during contact with environment in the form of instincts. The range of variation in the life of such organisms is practically nil, or at any rate exceedingly small. One individual, or, indeed, one generation, differs in no appreciable extent from another ; and such variation as takes place is rather the result of environment on the passive organism than of the organism upon environment. But in minds which are possessed of higher processes, whose area of consciousness has almost always some focus, sensational process is present only in the background of consciousness. There is an awareness that some sort of stimulus has been received and responded to in the nervous system, but not distinguishable consciousness of what the character of the stimulus is. Consolidated and habitual trains of adjustment may long continue in this stage before they sink down to the still lower level of unconscious process.

Sensational process may be used by any kind of mind, and the school pupil's mind uses it only too often when he is supposed to be using some higher or his highest process. It represents the attitude of the inattentive pupil towards the lesson he is supposed to be learning, towards the things which in the class-room he is supposed to be attending to. His attention with his higher process is otherwise engaged — the words of the teacher, the book he is supposed to be reading, reaching no more than the very background of his consciousness. Sometimes his whole mind sinks down to this level,

and he is conscious of nothing in particular, only of a feeling tone. Of course, a mind at such a level can learn nothing ; on the contrary, it must lose, for levels of process become habitual, and the oftener they are used, the oftener they are likely to be used. This form of the sensational process is familiar to every teacher. But he is occasionally tempted to remedy it by substituting for it what is only another and more intense form of the same process. There are stimuli and emotions whose feeling tone is so strong as to make the mind incapable of using any other process. Intense feeling of any kind tends to inhibit cognition. No other process can find room in consciousness until it has subsided. The mind suffering from pain, whether the pain be due to physical ailment, to anger, to hunger, or to some drastic form of punishment, is incapable of rising beyond an awareness of surroundings blurred out of recognition by intense feeling tone. Hence, frequent punishment is certain to defeat its own end, and is as sure to depress mind to its lowest level as a physical ailment.

A strong emotion may have an exactly similar effect, and this fact is of great importance in relation to discipline. No emotion is so sure to depress a mind to its lowest level of conscious process as intense fear, the physiological manifestation of which is a shrinking and depression of all nervous functions. Yet there is still a kind of strenuous discipline, practised with the best intentions by many a teacher with a view to securing some ideal

perfection of order, which keeps the emotion of fear so present in the consciousness of sensitive pupils as to render a sensational level of process of more or less completeness inevitable. There is a kind of order which enables pupils to learn, and another kind of order, which the casual observer, and even at times the teacher, may mistake for the first, which makes learning impossible. In no respect are pupils so individual as in their sensitiveness to emotions; and if that is the case, discipline must be tempered to the individual; and any discipline administered by a system of rules which rides roughshod over the individual for the sake of observing the rule defeats its own end, whether we regard discipline as in itself a training, or from its lower purpose of creating an atmosphere conducive to learning.

PERCEPTUAL PROCESS.

Perception is defined by Professor Stout as the cognitive function of a sensation. In order to exercise any cognitive function at all, one activity is necessary to consciousness—namely, Attention. Throughout our treatment of this and higher processes we shall need to predicate no other activity of mind. Attention is the one and central activity of which all mind growth may be regarded as a product. All education, whether intellectual or moral, must be regarded as a training and guiding of Attention, which in its higher forms turns into

Will, and in its lower forms is that out of which Will must be developed if it is to grow at all. In the sphere of cognition, Percepts, Ideas, Concepts, and Constructive Reasoning, are all of them products of Attention exercised on different mental contents ; so also in the moral sphere, to attend to the good not only is a preliminary to doing a good action, but ultimately means the same thing ; and similarly with attention to what is evil. Conduct and knowledge, which in the widest sense is only a particular kind of conduct, both of them depend directly upon this one activity.

Now, Attention as the one form of conscious activity does not admit of definition. If it is to be described, it can only be described in metaphors and in relation to its results. Thus, if consciousness is described as an area or a field, Attention is that which gives the field a focus and a changing focus ; or, if consciousness is described as a stream, Attention arrests in the passage through mind, from the unconscious into the unconscious again, one part or other of the stream, and keeps it for a shorter or longer space in consciousness. If, on the other hand, Attention is to be studied, it can only be studied in its products, and the processes which bring them about ; hence, both Perceptual Process and processes higher than the Perceptual cannot fail to throw light on the nature of Attention.

The simplest way to explain the characteristics of Perceptual Process will be to analyse one or two typical examples of it, and in order to avoid

possible complication by introduction of higher processes, these examples will be taken from animal life. Let us first of all take an illustration already given as an illustration of percept as a product—namely, the goldfish and the food—and look upon it as a process. The process includes all the stimuli and responses to them performed by the fish, besides the changes in its consciousness which take place. The first stimulus is the sense of hunger, and the response to it an expectant attention on the part of the fish. The next stimulus is caused by the disturbance of the surface of the water, possibly a slight stimulus, which includes a consciousness of the object thrown in ; the response to it is the innervation of all those muscles which direct the motion of the fish, as it darts to the surface, mouth open, ready to clutch the object floating on the surface. Then follows the touch stimulus as the object is reached and touched, and the motor responses which follow are the closing of the jaws, the swallowing of the food, and the return again to the former position under the surface, when, if hunger continues, the former attitude of expectancy is resumed, manifesting itself, perhaps, now by different and more excited motor responses, as the fish swims rapidly round and round the jar. At each step muscular action is dependent on a certain event in consciousness, and all the steps must follow one another in a certain definite order. If the fish is not hungry it may not have the expectant attention, and the series is not possible without it ;

if the water is not stirred, it will not rise to the surface for all its expectancy ; if a pebble be dropped in, it will probably dart to the surface, but, finding nothing, will neither clutch nor swallow, but as the unsatisfied craving reasserts itself, it will return to its expectant attitude below the surface. On the conscious side we have a series of mental phenomena—namely, want felt, disturbed surface noted, object seen, object touched, and the vague consciousness of muscular activity as each response occurs ; on the physiological side are the stimulation of nerves, and cells which conduct the stimuli, and of cells, nerves, and muscles which effect the response. The whole train has a meaning for the fish of which its movements are the expression, and the satisfaction of feeding the result. When it once starts, the train has a conative* force about it urging onwards towards its completion. It is guided by a series of percepts, of which some depend upon environment and others are percepts of the animal's own movements.

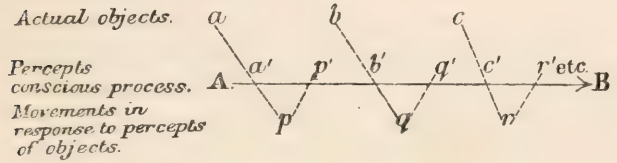
Let us take a further illustration of a rather longer train—that of a dog which fetches a stick thrown into the water, and brings it back to its master. It is hardly necessary to analyse it out in detail. When the dog has acquired the habit, the train falls into a series of percepts on the one side, and motor responses, which in their turn are percepts, on the other. The whole conative impulse

* Conation means striving towards an end, whether the end be consciously pictured or not.

connected with the train may be roused in the dog by the sight of the water, and his expectant attention is expressed by his leaps and barks, which increase as the master takes up a stick. The sight of the stick in the master's hand increases the excitement and prospective attention, which continues till the stick is thrown. This is a new percept. Then follow the motor responses of the rush into the water and swimming, then the seizing of the stick and return with it to the master, and so on. The dog has his series of percepts, which, as each occurs, are the signals for the response; the performance of the train has to wait upon the percepts: the dog cannot initiate them. An exceptional dog will get so far as to bring a stick to his master at the outset, but this is merely because in the past, when the stick had been returned, the master has thrown it again into the water, and the exceptional dog learns to begin a process one step further back. But no dog gets so far as himself to throw the stick into the water and initiate the train; he would need a higher process to do so. All the actions of the dog, so welded together in a train, start either in instincts or inherited capacities more or less pronounced. A dog has an inherited tendency to follow a moving object; he inherits a capacity to swim; he naturally takes to the water for the most part. If it were not for this it would be an exceedingly slow, if not an impossible, task to teach him to perform the train. Animal performances continually, and perhaps always, take place

on this level. We might represent them by symbols as follows :

Let a, b, c, etc., be actual objects, and a', b', c', percepts of these objects. Let p, q, r, be actual movements for which the percepts a', b', etc., are the signals, and let p', q', r', be percepts of these movements as they take place, then the whole train may be represented by the following diagram :



The line A-B represents the direction of the whole process, which is, of course, intensely teleological, towards its end B. The top line represents external objects, the bottom line movements, the middle line the series of percepts, the conscious series. The dotted lines represent the transition in turn of object to percept, and of percept to movement, and back again to percept. Such transition takes place in physiological process, and has no conscious counterpart at all, beyond the feeling of activity. The movements p, q, and r continue, and therefore the percepts of them continue, until stopped by the appearance of a new external object with its new percept, which is the signal for a new series of movements.

The whole series may start either with an actual

object and its percept—*e.g.*, *a* and *a′*—or with the instinctive rising of the conative tendency A-B, and the performance of the series hangs upon the appearance of actual objects, though when the tendency A appears the series can get no further without the object *a* and its percept *a′*. If at any point in the series an object fails, *e.g.*, if *c* does not turn up as a result of the movement *q*, the movement *q* may be continued for a time, but finally stops, and then the series gets no further.

The cat watching for a mouse and catching it, the spider catching a fly, the bird building its nest, the bee gathering honey, and a thousand other examples from animal life, are capable of similar analysis, and are examples of perceptual process. The series of percepts have each of them their own meaning, but it is strictly relative to the particular train of process to which it belongs, and cannot in perceptual process split away from its train.

In the dog's experience, for example, a stick may play a part in more than one perceptual train: it has one meaning in connexion with fetching a stick out of the water, another in connexion with carrying a stick, another in connexion with being beaten with a stick. The percept 'water' has one meaning in connexion with drinking, another in connexion with being washed, another in connexion with the stick. But in perceptual process these different meanings are tied not only to their percept, but to their train, and in each case the meaning is expressed by what

is done at the signal of the percept in each train. All meanings in perceptual process are isolated meanings, which can only appear in consciousness in connexion with their trains. Hence, if the meaning is to increase, it can only be because the whole train takes place now under one set of circumstances, now under another, and with differing results ; and these differing sets of circumstances are provided by environment, not by the agent.

The learning in perceptual process is in the most literal sense a learning by experience, and it is quite manifest the only possible basis for learning is to be found in the already existing trains which can be performed. The new must inevitably grow out of the old, and that it may do so there must be a partially new environment. To take a common instance, suppose that a dog is taught to beg. The attitude before he gets the food is a new one ; the end for which he begs, what he does with the food, is old. The new attitude may possibly be learnt by imitation—of that anon—if not, the dog has to be placed in the attitude, held there, and then given the food—*i.e.*, the new bit has to be fitted on to the old train by a quite artificial environment which no dog would create for himself ; and the sequence has to be repeated many times until the series gains cohesion and the percept of the word ' beg ' becomes the signal of the new attitude with its old ending—the food. The conative force of this new train is an old one and a strongly instinctive one—that connected

with food. Without it the new train could not be taught.

In higher mental process the name given to that element which is here called 'conative force' is the cryptic word 'interest'—a word of almost mystic import to some schools of educational theory. It will be subsequently of use to us to have realized what its nature is in a primary form. The term 'cohesion' has been used above in speaking of the connexion of parts of a train with each other. What is its nature and what does it imply? On the physiological side it implies no more than the fact already familiar—that processes which have already occurred in the nervous system in a certain order tend to occur in the same order when any one of them again occurs; or that nervous energy tends to travel along old paths—*i.e.*, along the line of least resistance. This is another way of stating that the nervous system registers by a change in structure any response made to environment.

The law of habit and the retentiveness of the nervous system are ultimate facts, and the cohesion of nervous processes admits of no other explanation. But when speaking of the conscious results of these ultimate characteristics of nervous process, psychologists use a new term to express the same meaning. The mental products of the perceptual series, which are, of course, the result of conscious process, are said by psychologists to be associated with each other. Thus, in the diagram of perceptual process given above, the percepts a', p', b', q', etc.,

are a series of associated percepts. When this language is used, let it be remembered that an isolated percept is impossible. To think of percepts, or any other mental products, as first isolated and then connected by some mysterious law of association, is most misleading. The products are never isolated, because they result from processes which are connected; and to speak of connected conscious processes *ex hypothesi* implies connected nervous processes, for every conscious process has its counterpart in nerve process. They are merely different ways of speaking of the same thing. There is only one law, called the Law of Retentiveness in speaking of nervous process, and the Law of Continuity in speaking of conscious process, and called the Law of Habit when speaking of both together. If the term Association is used, it must be remembered that there are only different forms, not different laws, of Association, all of which are cases of this one law.

The above must suffice as an indication of the nature of perceptual process, and a hint has here and there been given of its bearing on education. This will become increasingly clear when we have further studied the ways in which perceptual process grows into ideational process. There are, however, some facts of fundamental importance to any Theory of Education which may here be emphasized. We find the earliest and most rudimentary meanings attached to conative trains, and

the meanings are always relative to the attainment of an end, whether consciously pictured or not, which it is the function of the train to accomplish. All further elaboration only serves to enhance this characteristic of meaning, and to sharpen the purposive clearness of the train to which a meaning is attached. It is contrary to the whole scheme of mind growth to attempt to teach a meaning which can play no part in a conative train of the learner. Any such attempt is foredoomed to failure. Just as a new path in the nervous system can only grow out of an old one, so a new conscious conative train can only grow out of one already able to function, and a differentiation of an already existing train is a necessary condition of any new meaning. This applies to all levels of mind process and to all stages of mental growth.

For all early education it is very important to notice the part played by muscular responses in perceptual process. They are at first the only expression that meaning can have, and are an indispensable condition of reaching the next step in the performance of a perceptual train. It is not too much to say that every mind goes through a stage when thinking can only be done through the muscles. By means of his muscles the child first attains to any knowledge of things, and it is by his movements that his first meanings are expressed. The period during which a child remains in this stage varies greatly in length ; but whether it is long or short, it cannot be artificially curtailed

without permanent injury to the growing mind. Complete freedom for play, or movement within bounds set by considerations of health only, is the best environment during this period; and if children have to be brought into school, as happens in our infant schools, long before they have left this period behind them, then the school must find a very large field for this muscular play if it is not to be positively harmful. The directions for this muscular development are to be sought in the spontaneous movement and impulses of children, as they express themselves in games. Most indoor games, and all outdoor games, are examples of almost pure perceptual process. There is a continual tendency among teachers, in a mistaken intention of thereby furthering the growth of ideas in one narrow direction or another, to undervalue and misunderstand the uses of spontaneous perceptual trains; in so doing they hinder the attainment of even the narrow aims which they pursue, to say nothing of the wider aim for which education exists—namely, to foster mind growth. The only possible result of thus trying to force growth in one narrow direction, whether it be reading or writing or arithmetic, or any such direction, is to substitute for a natural, wider perceptual process, out of which ideas must grow if they are to grow at all, a narrower perceptual process, connected only with one class of percepts—namely, words to which no meaning, or the most jejune meaning, is attached, and out of which, purely artificial as it is, it is almost

impossible for meaning to grow. The Kindergarten movement has done much to correct this evil tendency; but if teachers understood the grounds on which it is based, it might do a great deal more. But the application of these remarks extends far beyond the Kindergarten; the whole course of education in the preparatory period—*i.e.*, up to the age of twelve or thirteen—is continually vitiated by a failure to understand that ideas develop out of perceptual process.

CHAPTER V

LEARNING AND THE GROWTH OF IDEAS

How imitation and social feeling contribute to the growth of meaning connected with perceptual trains—How acquisition of language helps the growth of meanings into ideas—Words as symbolic percepts—Analysis of early ideal trains—Growth of conation into purpose—Purpose defined—Combination of perceptual and ideal trains in performing purpose—Mental dispositions.

We have in the present chapter to attempt to trace the growth from perceptual to ideational process; in other words, to trace the growth into ideas of meanings attached to perceptual trains. Let it be remembered that our object is not to write a psychological treatise, but to bring out aspects in the growth of ideas of value to Education.

There are in man, and in many animals, two strong instincts, which play a very important part in the acquisition of perceptual processes, and hence of new meanings. These are the instinct to imitate and the instinct of fellow-feeling for one's own kind. For our purpose their existence must be taken for granted, and we have only to trace their results. Between them, they are responsible for most of the

learning of early childhood. It is impossible to say how far the innumerable small similarities in movement and expression noticeable in members of one family are due to them, and how far they are due to heredity. A child's watchful attention to the behaviour of people with whom he comes into contact illustrates them. Imitation is very closely connected, on the one hand, with the senses of sound and sight, percepts from which most readily admit of it, and on the other hand with movements, which are at first the only means of imitating which a child possesses. Other forms of imitation—imitation of objects, as in drawing—come gradually, and only as a result of imitative movements. If interest in a movement of any kind is intense, it is very difficult to inhibit the impulse to imitate it. Thus, for example, when a crowd of people at athletic sports is watching the high jump, one may see one leg instinctively raised along a whole row of onlookers, as each competitor rises to his jump. And the tendency, which lasts through life, is extremely strong in early years. Anyone who for a few moments watches a group of children of varying age at play can see it at work in the efforts the younger ones make to copy the elders. If it be remembered how important a part movements with their percepts play in a perceptual train, it is not difficult to understand the very rapid expansion of original and inherited series of movements.

The impulse to imitate sound is equally common and easy. The note of one bird will start another

singing ; the bark of one dog is answered by the barking of others within hearing ; and so, too, with many other animals ; and every one has found himself cheering with a cheering crowd, without any deliberate intention to do so. The two impulses of which we are speaking, imitation and fellow-feeling, together with an inherited tendency, pronounced among all children, to express and communicate meaning by means of sound, give rise to language ; and the acquisition of language is an aid so important for the growth of ideas that it might almost be said to be a necessary condition of it.

A sound produced is itself a percept of a complex kind to the producer. There is, first of all, the perceptual element connected with the muscles used to make the sound, the feeling that throat and lips are in such and such a position. If a child is deaf, this is the only element available for learning. The teacher has to use the eye of the child to watch different positions of mouth in another speaking, and direct the child's whole energies to reproducing in himself similar positions, and distinguishing them from each other by muscular percepts. In this case the muscular percepts alone have to become significant. In the case of the child who can hear, though when he is learning to speak the percepts of muscular movement always accompany his efforts, yet they remain quite undifferentiated ; and probably the reader will find that, though he can, if he tries, distinguish by muscular percept his own vowel sounds, *a*, *e*, *i*, *o*, *u*, yet he has never taken

the trouble to do so, still less has he acquired the capacity, possessed by the deaf-mute who is taught, of interpreting the sounds produced by others by sight percepts. The fact that the sound produced is a heard percept makes its character as a muscular percept comparatively unimportant. It is often overlooked that, in learning to speak, a very gradual and minute training of ear is involved ; and if the ear as an organ of sense be at all defective, the learning must necessarily be retarded, and with it, as we shall shortly see, the growth of ideas. Many childish mistakes in talking found difficult to cure are due to defective hearing, and if that cannot be remedied, the teacher has still open to him the muscular percepts, and by directing attention to them he has a sure, if a slow, remedy.

The earliest sounds produced by a child are the expression of his own feelings ; but these very soon attach themselves to external objects which satisfy the feelings, and the child will use the muscular language of pointing to designate objects which he wants. This language of gesture and motion is sufficient so long as the objects which he wants to satisfy him are there to be pointed at ; if not, he must use what means he has at his disposal. He may cry for them or creep for them. These means will not take him very far towards satisfying his wants, and an exceptionally intelligent child, or rather one in whom the tendency towards language is very strong, will at that point for himself have made words to supplement gesture language. But

probably long before this the child's nurse or mother will have taught him, and encouraged him to use, words for the things he needs. Ninety-nine per cent. of the words used in talking to a little child have no meaning for him, except that, as the expression of attention to him, they please him ; but by degrees they come to have a significance, now here, now there, as meaning things that he wants to have or to do, or dislikes.

It is not necessary to elaborate further the stages in learning to talk ; enough has been said to make it evident that words are percepts of a very special kind. Their value and function is directly connected with meaning, and otherwise they have no value. They serve, if produced by the child, to express meaning ; and if only heard by the child, to communicate meaning. They are an additional set of percepts, added to perceptual trains, and at first occurring side by side with perceptual trains ; and if a hitch occurs in the performance of a conative tendency in a perceptual train, they bring the aid of others to set things right. The purely perceptual train, with its conative tendency, always moves in one direction towards its end : it cannot conceivably be reversed ; but the word percept sometimes serves to express the child's own meaning, and sometimes to communicate meaning, and the direction is a double one. The word suggests the meaning and the meaning suggests the word. Meanings which, as we saw, were in pure perceptual process attached to their train are now attached

each separately to another set of percepts—word percepts ; and the word percepts, and with them the bit of meaning which was attached to them in the perceptual train, occur continually when the whole perceptual train does not ; and hence the meanings, before only applicable in a particular perceptual train, become available in other directions. But in any other connexion the meaning is not the same, but partially different, and hence it grows. Water, for example, has one meaning for a child when it is in a basin, another when it is in a glass, a third in a bath, a fourth in a river, a fifth when it rains, and so on. In perceptual process all these might exist, but would be tied to their train. By the aid of the word ' water,' if it occurs in connexion with each of them, the separate meanings tend to be gathered together. Not that each meaning ceases to be attached to its train, but that it is serviceable without the train by aid of the word percept. When the child hears the word ' water,' which meaning will be attached to it ? Does it not evidently depend upon the purpose for which the child wants it ? And supposing you desire to increase the meaning, is there a surer way of doing so than by bringing the learner face to face with a purpose in which water plays a new part ?

Hitherto words have been spoken of as separate, and all that has been said applies at a stage, through which every child passes slowly or quickly, in which only isolated words are used. Words at this stage are not any adequate expression of meaning, but

they are perceptual props of meanings which are continually growing with a child's varied purposes, and with his varied connexions with an environment, in which objects seen, heard, or handled once recur under different circumstances. This growth of meanings, which, of course, thanks to the aid of words, have already become ideas, sooner or later reaches a stage when the single word will not at all serve the child's purpose. He feels the need of expressing a meaning which only a series of words can convey, and this need gives a new impetus to the acquisition of language. Thus, in most cases the right and normal order of this early development is, first, rudimentary meaning attached to perceptual trains ; then a few words attached here and there to meanings—increasingly so as purposive trains grow out of rudimentary and inherited trains ; then further growth of meaning as each train, new or old, is applied under varying circumstances, and as its meaning becomes increasingly attached to words used ; and then a need for new words and connected words to express the new meanings and aid the accomplishment of new purposes.

Hence, instead of parrot-like learning and using words which have for them little or no meaning, the child will have meanings exceeding his power of expression, and growth of meaning will precede, not follow after, growth of vocabulary. Some children's imitative instinct in the direction of word acquisition is so strong that the words they use outrun the meanings they try to express. And such

children are foolishly judged to be more advanced than others ; for even at this early stage the use of language is made a criterion of ability by ignorant parents. They take a kind of personal pride in the wordy precocity of their offspring, and hurry the growth of language at the expense of meaning ; and thus in very early years they give a distorted trend to mind growth, which our present system of education, whether primary or secondary, with its habitual prejudice in favour of word work, is only too liable to convert into mental deformity.

A complete misunderstanding of how meaning is acquired underlies such proceedings. It is true that the word percept is invaluable as an aid to the acquisition of meaning, but only when it can be used as a prop to meaning that already exists, and hence gives that meaning a better chance of recurring, now in one direction, now in another, and so extending. But the vital part of learning is the purpose in connexion with which the word recurs, and this purpose is at one time to satisfy a bodily want, at another to look closer at an object seen, to touch it and handle it, to play with it, to make something out of it, or even destroy it ; at another it is to perform some muscular train, to jump, to shout, to run or climb, etc. A child's purposes occur here, there, and everywhere, where his impulses and activities or interests lead him, and these are the natural and only sphere of his growing meanings, just as they are the sphere in which his vocabulary will be richest. It follows that anything which

restricts the outlets of childish activity will retard the natural growth of meaning. But what, it may be asked, of the child's naughtiness ? Must not this be checked ? Undoubtedly, within reasonable bounds, and a child's meanings increase in a very valuable direction by such restriction ; but let it be remembered that discipline exists, not for the sake of the parent or teacher, but for the child, and that the child does not exist for the sake of discipline. The parallel between early physical growth and early mental growth is close enough to be enlightening. Just as in the case of physical growth, if the child has a healthy environment, and such simple and varied diet as his own tastes suggest, his bodily nurture may be left to look after itself, so with a simple and varied environment to supply its varying purposes the child mind will develop its own meanings abundantly, and acquire quite sufficient vocabulary for their expression.*

Under the term ' meaning ' connected with word percepts we have long been speaking of ideas, and we have already seen how words enable meanings to occur when the actual object which they represent is not present, but the word used to designate it takes its place ; and long before he comes into

* There is an error made by parents contrary to the one noted above. It is an attempt artificially to stimulate a child, not in the direction of knowledge of words, but of interests and amusements. Gifts of elaborate toys, provision of elaborate parties, visits to elaborate entertainments, do not develop, but hinder and distort interests, and end by producing that most pitiful of all objects, the child without interests, the blasé child.

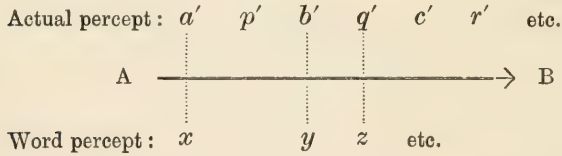
school to be taught, the child mind has risen to ideational process. He has ideas of a whole host of actions and objects, likes and dislikes ; and in the intervals when he is not at work physically and muscularly, his mind is at work recalling them in varying sequences, and further strengthening and elaborating them.

Words, then, are symbolic percepts, important, not for what they are, but for what they enable the mind to do—namely, to entertain a meaning of another percept without its presence, to communicate that meaning to others, and understand the meanings of others. But words are not the only symbolic percepts, if they are the most important ones. Gestures are also symbolic, and sometimes communicate meaning and express it more directly than words ; but the language of gesture is instinctive, and its interpretation requires no teaching. Drawings and diagrams are another type of symbolic percepts, the production of which by a child is usually instinctive at the outset, and admits of manifold culture and uses in education. Apart from its æsthetic value, or any question of the value of a drawing as such, in quite early years drawing very often plays a part in aiding the growth of ideas which is overlooked. The little child, if given a pencil and paper, at first merely scribbles for delight in scribbling, and except that he is gaining practice in directing and controlling his hand in what will subsequently be a very useful direction, his efforts do not much aid his ideas ; but very soon

the child begins to portray objects and people, in which he is interested, whether actual or from stories he has heard; and at that point the effort to portray, however unsuccessfully, is a direct aid to the child in recalling, moulding, and emphasizing his own thoughts. Then, the value of the product is not what it is, but what it is meant to be. Anyone can convince himself of this by a very simple experiment. Let a child be told some vivid story—a fairy-tale for choice—and then asked to repeat it. He will probably be either quite unwilling, or else, if he tries, fail; but let him spend half an hour with pencil and paper trying to illustrate the story, and he will produce some weird pictures, to his own delight, and with their aid he will recount whole sections of the story with ease. He has no doubt whatever what he intends his pictures to mean, and if anyone suggests a different meaning he will indignantly and scornfully protest. The child in his effort to draw has arranged and elaborated his ideas till they are clear and definite. Yet in so doing he has used no words; the figures drawn have supported his meanings. To follow out mentally any but the shortest possible train of ideas, even of a simple kind, is not within the scope of the majority of children until they are six or seven years old. They need symbolic percepts, if not actual percepts, as supports to their ideas, and they cannot hold a meaning before their minds without expressing it in perceptual symbols, whether words or otherwise. The mind only very gradually acquires the power

of silently recalling its meaning, even in an order already familiar. Hence the natural desire of the child to talk or be talked to, if he is asked even for a few minutes to sit still.

We are now in a position to represent by a rough diagram the way in which perceptual process and ideational process are related. Omitting the top and bottom lines of the diagram on p. 83, let us take the middle line of percepts as representing a perceptual train, and further represent the new series of added percepts by the x, y, z, etc. These new percepts are the words gradually acquired, which by degrees come to occur to the mind parallel with the actions done and objects dealt with, and the series will run as follows :



It will be noticed that not all the percepts in the perceptual train are marked as having word percepts connected with them, and this is because names are hardly ever given to all parts of a train, and are more often given to objects than to movements. They are given to those objects and those movements connected with one train which occur most often in connexion with others. The occurrence under varying circumstances tends to emphasize

them, and hence arises the need of naming them. If an object occurs ten times in our experience, we are more likely to name it than if it occurs once. Now, when a' and x have become connected—when, that is, the object has a name—the connexion is such that a' will suggest x, and x, if it occurs, will suggest, not a', for that is an actual percept, and a word cannot bring that back into consciousness, but its meaning. Thus, the meaning of a', which in perceptual process was tied to its train, and connected only with p' and with the conative tendency A-B, is now available for use whenever the word x recurs. But the object a, and with it the percept a', presumably is connected with several trains, and whenever it occurs it is called by the same name, and the word percept x also occurs, and the word comes to represent all the meanings that a has in any train. These meanings may any of them occur in mind supported by x, and are available in connexion with any new purpose for which the object a might be useful. x as a word percept is the prop for as many ideas as a has meanings.

It will have been noticed that, whereas in perceptual process we called the connecting force that held the train together a conative tendency, in speaking of trains of meanings supported by words, or trains of percepts devised and guided by ideas, the word 'purpose' has been used. With the gradually increasing clearness of mental content which the growth of ideas involves, the vague and blind conative tendency becomes a conscious aim

directed to an end represented by an idea before it is reached. *Purpose is, therefore, conation towards an ideal end.*

When a mind has once acquired ideational process, its whole life becomes a series of purposes, varying much in length, complexity, and direction, but all agreeing in this: that they cannot be accomplished without the activity of attention; they must occupy at least for one moment of time the centre of consciousness, and they may need to occupy it—*i.e.*, need concentrated attention—at every stage of their accomplishment, from their first occurrence as a purpose until they reach their goal. The more familiar the purpose, the less the amount of attention it requires; the greater the variation at any stage of a purpose from the familiar type, the greater must be the amount of attention necessary to accomplish it. As I write, for example, my thoughts are concentrated on the meaning which I wish to express, and my meaning passes almost unconsciously into words, and these into writing. The arrangement of the thought occupies the centre of attention, and the rest, as more familiar, takes care of itself in the background. At any moment a hitch in the sequence of words may bring the word series into the focus, and break for a moment the chain of meaning, or a blot on the paper or a fault in the pen may bring the writing series into the centre.

At any moment, if I am a smoker, the desire to smoke, and with it the new purpose of making a cigarette, may break the whole series; but the more

familiar and habitual the cigarette series, the shorter the break. The chain of thought series may resume its place in the focus, and though the writing series is inhibited, and the cigarette series takes its place, I find after a time that the cigarette series has finished itself in the background or in unconscious process, without much or any interference with the thought series ; and when the cigarette series is out of the way I may continue the thought series, the word series, and the writing series, as before, with the addition of a smoking series. Such examples might be multiplied *ad infinitum*, and they serve to make plain the way in which the lower processes—the unconscious, sensational, perceptual, with all the gradual stages between them—continue to be of use to mind when it can and does exercise a higher process, and enable it to carry on at the same time more than one kind of response to environment. If we disregard the element of sensuous feeling connected with some classes of process, we may regard it as a natural law of mind that the more welded together a process is by habitual performance, the lower will be the mind level necessary for its performance ; and if a series can equally well be performed in a low process, it is irksome to try to perform it at a higher process. On the other hand, if a mind is expected to perform a process which is wholly new, it will be quite incapable of doing so. No process springs ready-made from the brain except the lowest instinctive ones. The only possible sphere for learning is, therefore, to be found in purposes partly old and

partly new. There are teachers who apparently expect purposes, meanings, and interests to spring from the mind of the learner fully armed, as Athene sprang from the brain of Zeus. They have not grasped the very elements of mind growth.

What becomes of a series with its meanings, whether connected with percepts or not, when it has been performed? And how can it recur? These questions only indirectly concern us. We must take it for granted that they can recur, because we know that they do so. When they are not in conscious mind, they are merely possibilities of revival, or, as they are sometimes called, mental dispositions, stored in some unknown way in the nervous system, and liable to recur when any conscious content with which they were connected in the past is present in conscious process. But—*pace* the Herbartian—an idea ceases to be an idea altogether when it is not in consciousness, and nothing even approaching to a 'mass of ideas' is ever in consciousness at all. It only exists in Herbartian psychology, and in dictionaries and cyclopædias. Of all metaphors ever applied to mental process, or used to describe mental products, the metaphor of the mass as applied to ideas is the most confusing and the most inept, yet it is a hardy perennial in educational theory. Ideas can only occur in sequences, and their order is always determined by purposes past or present, or by some conative tendency past or present, not sufficiently distinct to be called a purpose.

CHAPTER VI

FINAL VALUES IN LEARNING

Ideas have a final value relative to purpose—Final value distinguished from immediate value—Illustrations of both in relation to teaching—Final values can be directly taught immediate values only indirectly.

In the last, and, indeed, in all the preceding, chapters we have had in view those characteristics of mind which make for efficiency or strength, and have looked upon ideas from a point of view more definite and restricted than is usual. The term 'idea' has been used as equivalent to a 'meaning,' which, owing to an attachment or association with a word or other symbolic percept, has split away from a perceptual train, and become available in other directions. The value of an idea, as we are now using the term, is directly relative to the purpose for which it can be used. My idea of a screw-driver, for example, is an implement which will screw or unscrew; and if I am placed in a situation where either purpose is needed, this idea or meaning becomes available—the screw-driver is the thing I want. But supposing that neither screwing nor

unscrewing ever became necessary to me, the idea of the screw-driver would not have an opportunity of being used ; it would not have the same strength of value. Or, taking another more complicated case, if I have to find the square root of a certain number, a train of ideas connected with square root must become available in a certain definite order, and be applied to the solution in that order, if the answer is to be obtained. If these ideas are not present, or present themselves in the wrong order, the sum cannot be done. Their value is relative to the purpose in hand, and, apart from it, in that particular order they have no value. Moreover, if the purpose for which that order was needed never recurs, the train of ideas necessary for its accomplishment will not recur either ; as a train it will lose its coherence, and gradually fall asunder. How long such a process of decadence takes depends on the retentiveness of the particular mind, and that quality is individual and fixed. Thus, all ideas have a value small or great in proportion to the number of purposes in which they play a part, and in proportion to the importance of those purposes for us in daily life. What the mind needs is ideas which it can use for its purposes, and opportunities for using and enlarging those ideas which it has. Value in this sense is always relative to a purpose, and as purpose presupposes an end to be obtained, we may call this kind of value the *final value* of ideas.

Final value attaches, of course, not only to ideas, but to percepts ; for the idea of an object does not

cease to be present in mind when the object itself is presented. On the contrary, it is enhanced, and gains a greater precision and definiteness. It can only lead to confusion to confine the use of the term 'idea' to mental products revived or reproduced when the actual percept is absent.

Besides this final value spoken of above, ideas and percepts, and more especially at first the latter, have another kind of value, which, to distinguish it, may be called *immediate value*. A spoon, for example, has a final value relative to all the different purposes for which it may be used, and in each of them it has its meaning; but beyond that it has, to the child looking at it, an immediate value arising from its shape, its feel, its brightness, or otherwise. As an object, it has a certain attractiveness quite apart from its uses. In hosts of cases this immediate value is the more prominent, and many objects, of which the final value is altogether obscure, possess it in a strong degree. A landscape or a picture as we gaze upon it, a poem as we read it, the thought of home as we recall it, may have an immediate value for us so intense as to blot out from mind all trace of final value. The whole attitude of our minds at the moment is expressed in the beautiful German line, 'Verweile doch, du bist so schön.' Other objects, on the contrary—the sight of a cruel deed, of a snake, of an ugly combination of colour, or the sound of a discord—may be so repulsive as to be nauseous. Immediate value attaching either to percept or its revived image

means that the percept or image is a point round which varying feelings and emotions play, holding it in consciousness longer than it could otherwise remain ; and that, not for the sake of anything to result from it, but because the experience itself is either worth having for its own sake, or else so fascinating that, though we dislike it, we cannot tear attention away from it. It would be a mistake to suppose that the feeling tone of immediate value is always a pleasant one ; for, where a complex play of emotion is concerned, tone oscillates so rapidly up or down the pleasure-pain side that it is impossible to gauge its character. Often the very variety and contrast in successive shades of tone constitute the charm of an experience. How intensely complex, for example, may be the play of past pleasures and regrets when we dwell upon the memory of an absent friend !

Immediate values give to life all its richness and its colouring ; final values make the mind efficient and strong in the performance of its purposes. Our immediate values are the best gauge of what we are, and our final values the best gauge of what we can do.

Before going further, it will be worth while to make the distinction here drawn plainer by instances. Suppose a man to be walking through woodland scenery with no definite purpose beyond mere enjoyment. He will dwell upon the freshness of the air, the brightness of the sky, and the shapes of the passing clouds ; he will note the lights and shades

on the foliage of the trees, the graceful form of the birch, and the fantastic twists of the boughs of the oak. He may pause to look closely at the flowers growing in the grass at his feet, and dwell on their delicate colouring or sweet scent. His whole attitude, if he be of an artistic temperament, will be one of abandonment to the beauty of the scene surrounding him. Short, fleeting trains of ideas, mental pictures of similar scenes, contrasts of the same place in its winter dress, may pass through his mind. His fancy may weave a whole web of ideal pictures round any one of the objects before him, whether it be the colour of a flower or the shape of a cloud, and through each of these fancy pictures runs, perhaps, a faint thread of purpose ; but his enjoyment of the scene depends upon their fleeting and spontaneous character. Such a man's mind is absorbed in immediate values. His enjoyment depends upon the fine blendings of fancy and feeling to which the scenery gives rise. Another man under similar circumstances might find the same surroundings dull and even irritating, because the objects before his eye had either no immediate value for him, or else a negative value.

Suppose the same man to pass through this same scenery no longer in this same mood, but bent on some narrow and definite purpose—say to find some object which he had dropped previously, and had turned back to find. The objects around him may be as suggestive and beautiful as before, but the mere fact that he has a definite purpose inhibits his

immediate value, and the only things for which he searches are final values—that is, some trace of the missing object. His efforts to recall what he did before may be intense, for much depends now on the path he took, where he rested. All these ideas he now recalls, because they have a final value, and may aid him in his search.

Suppose, again, that our visitor to these woods is a botanist. As a botanist, his purpose will be to note the species to which flowers, grasses, and trees belong. If the objects which he meets with are all familiar to him as botanical specimens, then his purpose is likely to wane in strength, and he may find time to dwell, like our first visitor, on immediate values, if flowers, trees, and grasses have for him immediate value ; but let his eye hit upon some rare specimen, and immediate value disappears. This flower has for him a final value : it is a specimen for which he has long looked in vain. He plucks it, and examines it with an eager interest, just because it fills a gap in his wants : it fulfils one of the botanist's purposes. His joy may be intense, but it is the joy of success, of purpose accomplished, not the contemplative joy of our former visitor.

Let our visitor be a woodsman, bent on his daily toil, which is to mark off so many trees in the wood to be cut down. He will set systematically about his job, noting only such facts as to the growth, size, and place of the trees as are for his purpose significant. The ideas which he uses are definite, restricted, and familiar to him, and are all ideas

with a final value relative to his purpose. With his definite piece of work to be got through, he has no time to waste on immediate values, even if the objects he meets might under other circumstances arouse them. His work may be so familiar to him as to bring him no happiness at all. He plods through his work with one eye on his progress through the task and the other on the position of the sun with a view to his dinner hour.

Let us for one moment imagine that each of our visitors to the wood has with him a pupil to whom he wishes to teach his woodland values. What difference will it make to him? And which of the three will have the easiest task before him? The difference in all three cases is evident. Each will have now a new purpose in his visit, and he must arrange his plan accordingly. His conduct cannot be exactly what it was when he was alone. As to difficulty, there is no doubt our woodsman has the simplest task, fortunately for him, for he is probably the worst teacher. Our botanist comes next, for his final values depend on a long series of past purposes, which he must unravel and simplify if he is to teach; while our first visitor has a task before him which years of teaching and all the skill of a Socrates may fail to fulfil.

Our woodsman most likely selects his trees by a sort of instinct, and he will probably be quite unable to put into words the reasons why he selects one tree for the felling and leaves another. He will probably utilize his pupil to carry his tools, and

leave him to learn as best he can by observing the proceedings of a skilled workman. But suppose him to be a good teacher, for the sake of argument ; in that case he will have to explain how he judges of the age of a tree ; then how he recognizes the sign of dry rot ; and, again, how this tree must come down, because it has reached its full growth, and that, because it is hindering other better neighbours from growing, and so on. He will soon call upon his pupil to judge for himself, asking him questions as to individual trees before he gives his own opinion ; and as he proceeds, he will find himself called upon to explain a whole host of things which he has got into the habit of taking for granted, and his learner's questions may lead him at times quite beyond his own depth. But as he is concerned with final values, his craft is one which can not only be learnt, but can be directly taught.

So, too, with the botanist ; but, with his new purpose of teaching, what he formerly dismissed and classified as familiar with a glance he must now pause over and elaborate. Every object in grass and flower growth opens up a new purpose, to be followed up possibly, and his difficulty will be in selecting the subject for his day's lesson. If he is wise, he will confine himself to specimens from the same class and the same family, and will not confuse his learner by pouring out before him a stream of information, now suggested here, now there. His difficulty will be to be elementary enough for his learner, and he, too, will succeed in proportion

to his skill in providing his learner with trains of purpose simple enough for the elementary stage of his knowledge. But his task is well within the bounds of direct teaching, for he, too, deals with final values, though they are complicated. If he leaves them and dwells with his pupil on immediate values, he may spend a pleasant afternoon, but he will not be teaching botany.

In both cases the medium of instruction will be deeds quite as much as words, and if the learner is to learn, he must himself actively participate ; for in proportion as he is active—that is, makes the purposes of his teacher his own purposes—he will feel the need and understand the value of the ideas which his teacher strives to impart to him.

But our first visitor has a different kind of task before him, in which no direct teaching can avail him much. He must, indeed, try to convey by words, gestures, and expression the charm which sky, clouds, flowers, and vistas of trees have to him, with their ever-changing composition of form and colour ; but he is all the time demanding far more than mere observation from his learner : he is dependent on an emotional and imaginative response to environment ; and if he does not find it in his pupil—though he may excite a kind of wondering surprise on the pupil's part at his own behaviour—he is helpless to teach. If he does find some response, however slight, he may put his pupil in a mood to exercise it, and perhaps enlarge its scope and strength. He cannot do much more than a

mother does for a young child when she points to an object, smiles, and says, 'Oh, pretty, pretty!'

These simple illustrations, which the reader can multiply in other spheres at will, have done more than exemplify the difference between final and immediate values: they have brought to light a fact far more important for the educator, that immediate values cannot be directly taught, whereas final values can. Yet immediate values, including, as they do, all æsthetic appreciation and all the finer complex of feelings where the good and the beautiful blend together, are far too important to be neglected by the educator. They belong to that most valuable class of mental products whose growth upward or downward is always progressing, and they exercise an influence upon character which is incalculable. Yet their growth is, for the most part, imperceptible to the learner, as to the teacher, except when some opportunity arises of comparing the present immediate value of certain objects—say a poem or a picture—with our memory of what those same objects were to us long ago; and we may be surprised at the difference, while unable to account for it, or even to enter into or understand our former attitude. He is indeed an unobservant teacher who has not learnt to recognize those things which may, indeed, be gradually—nay, unconsciously—learnt, and yet cannot be directly taught. Immediate values change and grow as some delicate plant grows, but they are not likely to reach their full growth and bear

flower and fruit if attempts are made to investigate the condition of their roots. Their dwelling-place is in the inmost recesses of the soul, and in proportion as their growth is upwards they form, as it were, a holy of holies, the entrance to which is very jealously guarded. To intrude or try to force an entrance is to desecrate. School life and curriculum must find room for their growth and provide material for their culture, but it cannot either ensure them or force them. We must leave immediate values for the present, to return to them in a later chapter.

All direct teaching is concerned with final values, and the attitude or set of mind in which they are prominent is always one which, in proportion as it is pronounced, tends to inhibit immediate values.

An idea which has a final value is *ipso facto* connected with a purpose which has already arisen and been dealt with at least once, and possibly many times, in experience ; and when it recurs, brought back into the mind by whatever prop, it tends to revive the whole train with which it is connected. It gives rise to a sequence of ideas, short or long, with a conative strength, more or less intense, to work itself through to its end. Hence it is not merely a mental content, but a force whose strength manifests itself in attention, and the amount of attention which it attracts is an index of its conative strength. But the strength of any given idea or series of ideas is not at all a constant element : it is strictly relative to the set or mood of conscious-

ness as a whole at the time of its recurrence. If all percepts could be at any given moment absent from mind, only those ideas would recur which were in harmony with the set or mood of consciousness at the moment; but both percepts and ideas connected with them are constantly intruding themselves upon consciousness, and they are as constantly being valued and rejected or accepted in accordance as they retard or aid the conation of the moment. Intruding percepts and ideas may, indeed, have an immediate value of their own, intense enough to break completely the pre-existing set of consciousness, and substitute for it one of stronger conation. Let a class, for example, who have been spending the last school hour on a lesson in any school subject hear the bell rung, which is the signal that school-time is over, and the chances are that the mood will instantly change. A holiday mood takes the place of the school mood, and a whole host of purposes relative to it, with any of the ideas connected with them, have a value relative to the new mood, whereas in the school mood they were inhibited. Thus, in order that any purpose may be entertained or receive attention—and the purpose will, of course, include all ideas connected with it—it is not sufficient that it should have a conative value in *some* mood: it must have a conative value in the particular mood of the moment, or else be sufficiently attractive to bring its own mood with it.

Power to control at will the moods of the moment,

to substitute a required mood when it is required, is the result of a prolonged period of training ; it is, in fact, one of the best tests of a well-trained mind, besides being an essential component of character. It is not, therefore, to be looked for in young and growing minds. These are characterized by rapidly changing moods and a great variety and fleetingness of purpose. Purposes, and with them ideas, change as rapidly as the mood. Trains of ideas are very varied and very short, and, in consequence, the span of attention is very small. The child's attention is guided, perhaps, more by ideas of immediate value—that is to say, by brightness and novelty of his own percepts—and his ideas with a final value are few, but very definite and strong for all that. In other and simpler words, his behaviour is largely the result of impulses, the strength of which varies with the individual ; and if his impulses be strong, he may indeed be said to be wilful, but cannot by any means be said to have a strong will. Strength of will presupposes attention with a wide span, a long training in the carrying out of purposes, and a command over numerous ideas relative to them, possessing strong final value. None of these three requisites are possible without the other two. Hence it matters little whether we regard the teacher as one who aims at increasing the span of attention, as one who provides a carefully graduated series of purposes for the pupil to carry out, or as one who fosters the growth and acquisition of ideas possessing final

value. If he does any of these things efficiently, he cannot help doing the others, and, whether he recognizes the fact or not, is fostering the growth of a strong will, in so far as strength of will is possible in the pupils with whom he has to do.

The distinction which has here been drawn between immediate and final values of ideas is an unusual one, and may stand in need of some justification. It is probably already apparent that the term 'value' applied to ideas includes much that the Herbartian means by the term 'interest,' and it may not unreasonably be asked why a new term should here be introduced. To give a full answer to this question, it would be necessary to enter into a detailed statement of Herbartian doctrine, and contrast it with the view here taken, and such an undertaking is beyond the scope of these chapters. If, however, the term 'interest' had been here adopted, it would have been impossible to avoid a confusion of two distinct points of view. Ever since Herbart's time the term 'interest' has had a meaning relative to his use of the term 'idea,' and the doctrine of apperception masses connected with it. Now, the word *Vorstellung*, Herbart's word, which is, unfortunately, usually rendered by 'idea' in educational literature, has a meaning far wider than has been attributed in these chapters to the word 'idea.' The nearest translation of *Vorstellung* is the word used by Professor Stout, 'presentation'; and as every kind of mental content

whatever, *ipso facto*, has a presentative aspect, the term 'presentation,' or the Herbartian idea, must include every kind of mental content; purpose, feeling, tone, percept, mental image, idea, mood, emotion—all these are merged together. Nor is any distinction possible between them while one term is used to cover them all. To Herbart, presentations are mental elements which react upon each other, compete with each other for a place in consciousness, combine into clusters and masses to reinforce each other according to fixed laws. It is clear that the term 'interest,' so closely associated with an assumed interactivity of presentations, could not safely be used of ideas in the restricted sense in which we have employed the term.

CHAPTER VII

GROWTH OF IDEAS IN IMAGINATIVE PROCESS— NORMAL TYPES OF LEARNING

A. Growth of Successive Processes of Learning traced in Early Childhood: Percepts as props of meaning — Importance of play — Types of imaginative process: receptive, reproductive, expressive—Their function as paving the way for thought—Necessity of scope for spontaneous play of these processes if thought is to develop. B. Uses made by these Processes in Learning: Their use out of school natural —How can they become natural in school?—Conditions on which their use depends—Their connexion with conation and relation to each other—Extreme importance of expressive imagination, and different types of it—Neglect of its use as a cause of failure—Two types of reproductive imagination distinguished and illustrated.

In the previous chapters we have described, in ascending order, mental processes which coexist from earliest childhood in every normal mind—sensational process, perceptual process, ideational process. However far beyond them any given mind may develop, they still continue throughout life to form by far the greater part of mental activities. Higher process, of which we have still to speak, intervenes only occasionally, and, with the vast

majority, only when environment calls aloud for its use. There is no breach between these processes : each emerges from the one below it, and presupposes it, and at whatever level of process a thing is learnt, the more familiar and habitual it becomes, the lower the process necessary for its performance.

Our next task is to try to indicate the nature of a higher form of ideational process, and in so doing we at once approach topics with which thinkers have been concerned since the first dawn of philosophy. It is therefore the more necessary to remind the reader that our aim is the exclusion of controversial theories and abstract philosophical questions, and the presentation of only those aspects of our topic which seem necessary to a theory of education—*i.e.*, which can throw light upon the art of teaching.

It would probably appear to be the simplest method to adopt the mode of procedure followed in dealing with perceptual process and ideational process—viz., to give examples of products first, and then attempt to picture the process. But there are difficulties which make this procedure inadvisable, if not impossible. We must try at the outset to picture the workings of a mind of a normal child of from three to five years old, and trace the processes that its activities show. The child starts, of course, with the consolidated courses by which the body is nurtured and the limbs are moved, and with others, instinctive and inherited, by which its primitive emotions are expressed, which very soon show themselves—we must leave on

one side questions as to the order of these and the average age at which they show themselves, as also those further and more difficult questions as to the part which imitation plays in their growth. Beyond these, the special senses—touch, taste, hearing, and sight—have been long at work, aided by movements of body and limbs, in building up a host of perceptual processes, each dealing with a little bit of environment, to which meanings have become attached. These meanings, of course, at first are limited to the range of the child's immediate surroundings. Meanings tend to recur in sequences of habitual order, because each piece of perceptual process is essentially a sequence. Perceptual trains are grouped into dispositions or larger wholes round some central and recurrent feature in environment, or some recurrent want or impulse of the child. Side by side with these perceptual trains, now blending with them, now overshadowing them altogether, runs the play of childish emotions and affections—the joys and sorrows of childish life which form the child's quickly alternating moods—and so close is the connexion of all these, so quick and subtle their variation, that no psychology can attempt to trace them. Then comes the great step forward in mind growth marked by the acquisition of language, which is to make free ideas possible. How easily and naturally in the normal child that step is taken ! The needs of the child cry aloud for it, and environment entices the child forward from gesture to word, and from single words and gestures

to sentences expressing the meaning of some one or other of the numerous perceptual trains or physical needs. The language impulse is part of the child's own inheritance, and the language itself part of the child's inherited environment ; and in a few months the child has crossed a rubicon which in the long past must have been for ages a barrier to primitive man.

It is not mere retentiveness that enables this acquisition to be so rapid. Nor is it merely that the words acquired provide a natural vent for the overflow of meanings which must find some expression ; for in that case one set of word symbols would be felt sufficient, and there would be both difficulty and unwillingness to acquire a double set for the same meanings. The Swiss child, or the child of parents of different nationality, takes as easily to two languages as to one, and uses the two without confusing them, as occasion calls, in a manner that excites the wonder of the student of child-life. It would be difficult to find a more striking example of that extreme plasticity and responsiveness to language environment which is so characteristic of these early years ; but the physiological arrangements which provide for the acquirement of similar dispositions side by side and without confusion, yet each of them ready for use at the call of environment, are still a matter of pure hypothesis. It is however, important to notice that the doubling of word series does not seem in any way to aid mental growth. The bilingual child is no more advanced

in intelligence or capacity than the unilingual child. The second language series is a special adaptation to environment, acquired and cultivated only so long as environment demands it ; and as soon as it is no longer used or needed the second series disappears as fast, or faster, than it came, and leaves little or nothing behind it, except, perhaps, a certain change of mouth, lips, and throat, which, if the second language be needed again at a future time, will make pronunciation easier and more correct. If in these early years one language alone can do all for mind growth that language acquisition can accomplish, if the second language, acquired in the same way, is for mind growth practically useless, it is not likely that any greater value can attach to the process of learning a second language on the natural method in later years. The natural method cannot be justified on any but purely utilitarian grounds.*

The main function of the early language series is to enable meanings hitherto attached to perceptual process to become available in many other directions, limited only by the purposes of the child. The passage of meanings into ideas, and of ideas with ever-increasing range of application, and therefore ever-increasing freedom, corresponds to the transition from percept to concept, of which so

* The acquisition of a language on the analytical method is, of course, quite a different matter. Through such means not only the structure of language, but also the structure of thought itself may be learnt.

much is made in handbooks of psychology. Yet, from the point of view here taken, this distinction is of very slight importance; for the genetic method is concerned with processes rather than products. The concept as a product is implicitly present very early in the growth of ideas; any meaning which is utilizable in more than one direction is already an implicit generalization. But the implicit character of the child's concepts does not involve a vagueness in the child's meaning. A child using a word to denote an action or an object knows perfectly well what action or what object is meant; but the content of the meaning, though known in such a way that the object or action will at once be recognized if presented, is as yet quite undifferentiated. It is known as a whole, but not known in its parts. There is no necessity for the child to attempt to unfold in language the whole meaning of his ideas, and such attempts are quite alien to childish thought.

Trains of thought unaccompanied by percepts as props are of very slow growth. As conation gradually develops into conscious purpose, the child anticipates his own actions by trains of ideas representing their supposed result. But before he is able to think out a train accompanied only by a series of mental images, and not by percepts, symbolic or otherwise, the child passes through a transitional stage of varying duration, which is of great importance to all early teaching, and in this stage percepts play a peculiar and important part.

In the first place, the child makes his own experience more really his own property by continually attempting to reproduce it; and before he can rethink it mentally, he needs to objectify it; and nothing helps him so much in these attempts as simple toys. A doll becomes a *corpus vile* upon which all personal treatment and ill-treatment which he may have met with is visited again and again; a doorstep becomes a shop in which traffic in sand and mud for numerous articles known to the child is carried on, with beads or pebbles for coin; a stick becomes a steed on which he rides round the room, as he has seen a soldier ride down the street; and so on. Examples might be multiplied without end, and all of them are instances of a reproduction of past experience rendered possible by means of perceptual props. The props need not be elaborate: they need not at all nearly resemble what they are imagined by the child to represent; and children show a special liking often for the simplest props, bearing hardly any resemblance to what they are imagined to be. An elaborate toy defeats its own object, and prevents it from fulfilling the child's real need. Its very detail and gaudiness of elaboration distracts the child from his own thoughts and purposes to itself as something to be admired; or, to use the language employed in the last chapter, the child's immediate value for the toy as an object dulls his sense of final value in it, and for his mind growth the final value of a toy is by far the most important. It is not to be wondered at that those

children who get little opportunity to play are lacking in imagination. This play instinct is essential to the growth of imagination, and play forms an intermediate and essential link between the train of percepts and the train of thought. Without the former the latter will be weak and stunted. There are few more pitiful sights than that of the child that has no opportunity to learn how to play ; nor, on the other hand, is it to be wondered at if, where the playthings are too elaborate, and the nurse or mother too pressing with uncalled-for suggestions, the child's play fails to attain its object. Little children get on best when they are left a good deal to their own devices in their games, and their grown-up admirers should know better than to interfere. The child wants in his games to reproduce, with variations, his *own* ideas, his *own* experience, not that of his elders. If elders interfere at all, they should play *with* the children, not instead of them.

Thus, reproductive imagination paves the way for an imagination which can produce, and the play instinct cannot be stinted or starved without real risk of stunting the child's mind.

There is a second type of imagination which precedes and for long runs *pari passu* with reproductive imagination, aiding and nurturing it. It might well be called *receptive imagination*, and is manifested in a childish love for stories, more universal, lasting, and wholesome even than the play instinct, and one, unfortunately, even more

often starved. The child's ideas, purposes, and values centre round himself and his own experiences. If they are to grow into strong systems, directing and controlling both the will and environment, they must first spread out in early years to embrace a larger and freer environment in imagination. But in this early stage they start from personality and stretch towards personalities, and take inanimate objects into their range by turning them into animals or people, and endowing them with life. The child's receptive imagination is animistic. This was so in the childhood of the race, and will remain so with the childhood of the individual, unless, indeed, as one is sometimes inclined to fear, our primary education succeeds in completely deforming childhood. This is the stage where fancy is unencumbered by fact, and belief has no limit but that set by sympathy ; and if the child gets his chance, he will make his own all that we have left to us of what was best in the childhood of the race—their fairies, dwarfs, dragons, and heroes, talking animals, flowers, and trees, suffering heroines and disguised princes—and make of them all a world in which the childish fancy will delight and childish feelings and judgments grow and widen. It is thus children come to feel that the whole world is akin to them and they are akin to the whole world. The poorer, the more squalid, the child's own environment, the greater the need for this fancy world, for it protects the young soul like a pure atmosphere, through which the mean,

sordid, and vicious cannot pass. Yet it is exactly here that the children born into squalid environments are starved, and their teachers, who might supply the need, think their efforts more worthily expended in producing precocious spelling and premature arithmetic; and when, at a later stage, they find imagination needed and wanting, they are at a loss to account for the fact.

Though it would be easy to enlarge upon this practical aspect of our topic, it can here be no more than noted, for our immediate aim is rather to make clear how this expanding of the world of fancy aids mental growth. Upon the emotional side it gives an ever-widening range to the play of feeling and sympathy; and this develops a responsiveness and plasticity of attitude which later becomes a very important asset in learning, and makes the task of teaching a pleasure. This gradually growing sympathetic attitude towards environment paves the way both for literary and artistic appreciation. On the intellectual side the mind opens to receive a host of new and strange ideas, and their strong contrast with the child's ideas of the world of fact, even though the contrast remain implicit, gives a precision and sharpness to the latter which they cannot gain in any other way. Side by side with this there is a continual practice supplied for the childish judgment. For the great advantage of this animistic interpretation of nature is this: that as soon as he regards anything as personified, the child at once proceeds to pass upon

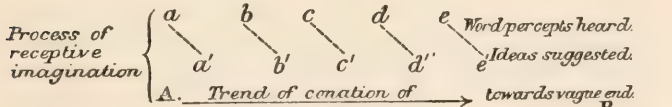
it a judgment of praise or blame—just the type of judgment which develops soonest, and which children never tire of passing. Judgments on conduct have strong value, both immediate and final, to children at an age when judgments on matters of fact have often little or none.

The third type of imagination intermediate between the ideal train supported by symbolic percepts and the train of thought proper—viz., ideas supported by mental images only—might well be called *expressive imagination*. The meaning of this term will be most easily understood by contrasting it with *receptive imagination*. When a child is told a story of any kind, his own train of meanings is dependent at every step upon the percepts of his informer's words ; his meanings are guided and suggested by what he hears. Percepts come first, meanings afterwards, but in *expressive* imagination the order is reversed : meanings come first, and percepts—*i.e.*, words—self-produced percepts, follow. Suppose the child himself to be telling a story ; he probably knows at the outset very vaguely what he means : his conation has a distinct set ; he intends to relate some bit of his past experience, present to his mind, not as a series of steps, but as a vague whole. As he proceeds his conation grows into distinct purpose ; the vague whole unfolds itself into a distinct series of related parts, just in proportion as he finds words to express each bit of meaning. The whole is not at the outset a related series of ideas : it is rather a mass of mean-

ing; but as expression proceeds, as each bit of meaning splits away in turn from the mass, it becomes an idea, clear or vague just exactly in so far as the child's words express it. What starts as a mass becomes a related series of ideas.

Perhaps two diagrams may aid to make clearer the distinction drawn in the last paragraph. It is of such great importance to any teacher that such an attempt, even if unsuccessful, is justified. First as to receptive imagination, let us represent the conation of the hearer by an arrow passing from left to right; the heard percepts of the words spoken by the narrator by a top series, *a*, *b*, *c*, *d*, etc.; the ideal series of the hearer by *a′*, *b′*, *c′*, etc., and the relation between the two by a dotted line connecting them.

Thus:

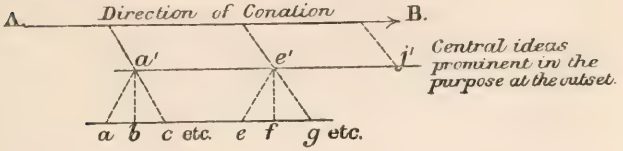


Here *a* may be taken for the percept of a word or sentence suggesting the meaning *a′* in which the conation receives its first determination, and so with *b*, *c*, *d*, *e*; it is evident that the whole train of ideas *a′*, *b′*, *c′*, is dependent on the percepts *a*, *b*, *c*, *d*; and if they suggest no meaning, or if the meaning suggested has no value either immediate or final, the whole train *a′*, *b′*, etc., will come to one end, and the conation towards B die away. At the outset

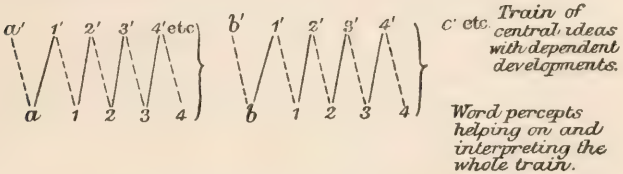
of the train there can be no final value, except such as is aroused by the action of a previously formed disposition, resulting from similar experiences, though this may be strong. The meaning or idea a' must therefore have some immediate value if the attention is to be aroused. Such final value as the train acquires it must gather as it proceeds, and since meaning or ideas still to come cannot lend it value, its final value must depend on the relation of a' to b', and both to c', and so on. The final value will thus be cumulative towards the unknown end B. When B is reached the feeling of satisfaction is, of course, proportionate to the final value accumulated—*i.e.*, to the strength of the conation.

Let us now proceed to contrast with this in some detail the process of expressive imagination. We start with a disposition rising in consciousness, a desire more or less strong to unfold a piece of past experience. This, again, we may represent by an arrow denoting the direction of conation towards an end to be progressively realized. The conation here has some strength of its own from the outset, and the disposition as it unfolds itself finds expression in word percepts, each of which marks a stage in the unfolding, a step towards the realization of the end. At the outset the order of unfolding is not fixed ; probably one or two striking incidents in the train which is to be formed stand out at the beginning and help its direction (viz., a', e', j' of the diagram). These form nuclei round which others group. Such a process may be represented thus :

First stage :



Second stage :



The diagram representing the first stage needs no further explanation. The second diagram represents the elaboration which the central ideas undergo, as they find expression in language.

Here we get a progressive series of ideas a', 1, 2, 3, etc., each in turn finding expression, *e.g.*, a' in the word series a, which latter, though its expression is at the same time its support, in its turn suggests the subdivision or development into the sub-series of ideas 1′, 2′, etc.; while they each in their turn are clear just in so far as they succeed in finding their fitting expression in the word series 1, 2, 3, etc. When a' has reached to full development and expression, it suggests the second central idea b', and the process is renewed till b' and its sub-series 1′, 2′, 3′, have similarly unfolded themselves.

Now, whereas in receptive imagination the whole

purpose was dependent for guidance on another, in expressive imagination the whole purpose begins and ends with the thinker. It is therefore both a more complex, a more difficult, and a more educative process. But the point specially noteworthy here is the way in which the words, in which the ideas express themselves, in their turn help on the further unfolding of ideas. If a' cannot find verbal expression, its sub-series $1'$, $2'$, $3'$, will not occur; the sub-series literally depend upon the word series a. If the series of the word percepts are jejune and inadequate, the series of ideas will be equally so. There is no process so certain to enable a child to become master of his own thoughts and give him command over his own language as free exercise of expressive imagination. It is not going too far to say that every child goes through a stage when ideal series of even very moderate and simple sequence are impossible without these accompanying series of words. At the outset, it is true that meanings, and even ideas, may find expression in gesture and emotion; and not only in childhood, but throughout life, gesture and emotion come to the aid of words to help out the expression; but soon after imitation and instinct have started the child on the path of acquiring words to express meaning, these, for reasons shown in a previous chapter, become *par excellence* the mode of acquiring and using and expressing ideas. Children pass through a stage when, if they are to think at all, they must think aloud.

We have in the present chapter already briefly

dwelt upon three processes which are subsidiary to, and pave the way for, thought series. These are—(1) The reproduction and elaboration of acquired meanings and ideas in play, where actual objects serve as supports or props to the train ; (2) receptive imagination ; and (3) expressive imagination, where words are the mode of expression used. If thought series proper—*i.e.*, series of ideas supported only by mental images—are to develop, these three must have their free scope. If they were denied scope altogether there could be no thought series, but luckily the impulse towards them is so strong in children, that no ordinary environment, however bad in other ways, can completely prevent their exercise. The average child spends the greater part of his time—when he is out of school—in their exercise in one way or another. When left to himself he will find means for exercising the first and even the third—failing people, he will use animals and objects to talk to—and with his companions he is continually at work exercising all three. Consequently, all normal children develop thought series proper dealing with the everyday out-of-school environment. It is in this sphere that their ideas grow and grow fast, and the growth is in the direction determined very largely by environment, and is continually urged forward in that direction by that need of sympathy with their environment which all children feel. The street arab has his set of ideas, and his thought series, which aid him to deal with his environment, and feel at home in

it ; and the son of a millionaire has his, though their sphere of application may be very different ; but both would feel quite lost in the environment of the other. Both of them bring with them to school their own set of ideas as their stock-in-trade, and these ideas must be the starting-point for what they are subsequently to learn. It is not mere social prejudice which urges that it is desirable—nay, necessary—for the teacher to know something of the environment from which his scholars come : he must do so if he is to teach them ; otherwise he must put them into a new environment, wait till they have to some extent succeeded in adapting themselves to it, and teach them from that as a basis. Nor, again, is it mere social prejudice which decides that each of the two will do best in a different type of school.

Let us leave here the topic of the aid given by these three processes to thought, and briefly consider a slightly different question germane to it, which the last paragraph will probably have suggested. How is it that, if these processes find scope in ordinary out-of-school environment, and there never fail to produce a growth of ideas leading up to thought series more or less rapid, more or less extensive, there should so often be failure to secure a similar growth in school ? Why should so much school teaching fail to produce anything worthy to be called trains of thought ? It must at the outset be remembered that out-of-school environment will always be more productive of rapid mental growth

than actual work in school, and that for many and obvious reasons. In the former, growth is spontaneous and natural, and often unconscious; the surrounding environment is always varying, but never loses its touch with childish meanings: it is always partly familiar, partly new, and life is always going out towards it and assimilating it. The school, as we saw in Chapter I., is artificial; it undertakes a preparation for life by short cuts and concentrated methods. If two parties start to climb a certain hill, and while one pursues the gradually winding and easily graded path, the other chooses a steeper and more direct ascent, though the former party appears to be progressing more rapidly, though its pace is faster, yet those who chose the steeper gradient, provided it be neither too steep nor too exhausting, will arrive far sooner at the goal. Out-of-school environment is the easy path along which movement is rapid; the school is the steeper gradient, often strewn with obstacles that tax the strongest and discourage the weakest. Yet climbing, though strenuous, has its own pleasures, and the easy path may soon become monotonous.

Though we are not in a position to answer fully the question with which we started, if we consider the use which the school makes of these processes which we have been considering, we shall find some answer, if an incomplete one. We have represented these processes as active in child life, but they really represent a certain level of mind-working, which, as we have shown to be the case with sensational

and perceptual processes, when the mind has once acquired it, never ceases to be of use, however far mind may advance beyond it. The mind which can follow out elaborate trains of thought does not always do so ; they form interludes merely in its activity, and when they cease a lower level of process intervenes ; and these three processes, which form one level of ideational process, whereas thought proper forms the higher, are continually used throughout life to meet situations too complex for perceptual process to deal with, and too simple to demand the use of thought trains proper. They concern, then, not the infant school and lower standards merely, but all education, from top to bottom, and are more often at work in life, and in school too, if the school is a school for thought, than any other form of conscious activity.

Let us turn our attention first of all to the earlier years of school life, corresponding roughly to the infant school and the lower standards of the primary school. It is here that the kind of use made of imagination is of the first importance, if there is any truth in our contention that these processes are the necessary forerunners of thought.

In our brief description of them we took the three processes of imagination in the following order : (1) Reproductive ; (2) receptive ; and (3) expressive. It will here be more convenient to change the order, and deal first with receptive, then expressive, and lastly reproductive. What use then, does the school make of receptive imagination ?

The answer is obvious. Teachers make only too large a call upon it ; they are continually appealing to it, too often without comprehension of the conditions upon which it depends. Despite all that has been said and written on this point by every recent writer on education, there still are teachers who seem to imagine that the mind is like some empty vessel into which information must be poured in the hope of filling it, and all teachers are in continual danger of forgetting that a wide capacity for receptiveness is not a datum which can be made use of, but an end which education must try to produce. Hence it is still necessary to insist that receptive imagination is a process in which the mind is intensely active, never passive, and that its activity is at every step dependent upon such meanings and ideas as have already been acquired. Nor, indeed, is it sufficient that such and such meanings and ideas have been in the pupil's consciousness some time in the past. In order to be of use they must be revivable in the present. Even this is not enough, for the form in which they are revived is most likely to be imperfect and vague, and most unlikely to be exactly such as is requisite for right interpretation of the new data. There is the less need to elaborate this aspect of mind growth at length here, partly because previous writers, and especially those of the Herbartian School, have emphasized it in great detail, and partly because we have already met with it again and again earlier in the course of this inquiry. It

is one of those ultimate laws of mind which we first came across in dealing with perceptual process, and, being true at that level, it, of course, holds good for all higher levels of mind-working. There is, however, this difference in its manifestation at an ideational level—that there is greater complexity and greater variety in mind products with each succeeding stage of mental elaboration. The available store of meanings and ideas of any mind at a given moment—its dispositions, to use a technical term—are not all at the same stage of development. Some are already free ideas, available, that is, already in a multiplicity of directions, and connected with many past purposes, and possessing, therefore, a clear, definite content, which can easily be put into words (*e.g.*, ideas of simple, familiar objects and animals to a little child, the concords to a Latin scholar, simple relations of numbers—*e.g.*, $5 \times 6 = 30$ —to a boy or girl, chemical formulæ to the expert chemist). Others, again, have occurred only seldom ; their content is vague, they are still tied to the purposes with which they are connected, and words used to denote them are merely signs by which they are labelled, though the label gives little indication of the content (*e.g.*, subject and predicate to a child in the early stages of English grammar, the way to deal with factors to a child beginning division, the English Constitution to a child of fourteen). Others, again, are meanings which are too vague to be called ideas at all ; they are attached to perceptual trains, and have not yet split away from them (*e.g.*, medicine

as something horrid to take, a circle as a line going 'round and round,' steam as 'what puffs out of the engine or the kettle,' clouds as 'fluffy things in the sky'). Meanings in this stage are often impossible to put into words. Though not themselves ideas, these are the raw material out of which ideas are made.

These are merely stages in the course of mental growth, picked out here and there for the sake of contrast, but any mind possesses contents or meanings which lie anywhere and everywhere in between them. Whatever the available dispositions of the mind appealed to by the teacher, they are the only means by which receptive process can be carried on; and it is obvious that, unless previous thought has been given by the teacher to the way in which he will present what he has to teach, it is a matter of chance whether he succeeds or not. And in the choice of the subject to be taught, the first thing for the teacher is to decide whether there is any disposition in the minds of the pupils which will enable them to comprehend; hence he is dependent upon his knowledge of the pupils' capacities. Supposing him not to possess that knowledge, he can only experiment until he finds out. Supposing him to possess it, his first task will be to separate in his own mind, in the subject-matter of his lesson, that which is new to his pupils from that which they already know or partially know. This done, he must bring to their minds the meanings and ideas which he intends to use, and mould them, wherever he finds them imperfect, into the form

which he needs. Obviously this task will be the easier the better the teacher knows his pupils, and it will always be more difficult towards the beginnings of a subject than when pupils have already made some progress; and a good teacher will often be so sure of his pupils as to dispense with this stage altogether.

Nothing aids receptive process more than a conation in the desired direction, and each of the recipient ideas or meanings brings with it as it rises some fragment of reviving conation. These are not always in the direction required, and may serve as distraction rather than aid. If, however, the pupil knows roughly the trend required, those fragments of reviving conation which harmonize with it of themselves combine with it to reinforce it, while the others will usually themselves sink and disappear.* In all this there is nothing new, nothing

* An example may make this clearer. If I suggest to a class of young children as the subject of a geography lesson, 'We are going to talk about the lake in the Park,' threads of conation in connexion with the lake arise in nearly all minds, because all have experiences of one kind or another connected with it. A has fed the swans, B got wet there by tumbling in, C sailed his boat on it—none of them experiences germane to my purpose, but all of them sufficient to raise expectant attention. D and several others wonder where the water comes from, and has noticed that it runs away at one corner. E has noticed that there was scum at one end, and wonders why. These are useful and germane. As I put questions as to shape of banks, presence of islands, etc., fragments of conation connected with various recollected images assist the general purpose, which is strong, because all feel that they are contributing something.

not perfectly familiar to readers of the Herbartian school. But in their presentation of the facts, their terminology makes no distinction between the conation and the meanings adhering to it, none between meaning and idea, and none, finally, between the immediate and final values of ideas and meanings. The wide and vague terms, apperception and interest, seem to include things which it is essential that a theory of education should distinguish.

In receptive process, as we have described it, the conation is one of gathering energy in proportion as the process is successful, and disappears into an immediate feeling (or value) of satisfaction when the process is complete. It starts as a vague conation which clarifies itself into purpose as it proceeds, and recipient ideas, as they rise along its course, each contribute something to its strength and aid its definition in proportion as they are germane to it. From their study of this process, Herbartians deduce three of their formal steps—the End, the Preparation, and the Presentation. These are, undoubtedly, useful distinctions, especially in the case of the beginner in the art of teaching. But no statement of the End (and often to make one would be perfunctory, for it is already known) does more than start conation in the required direction; no preparatory stage either is, or ought to be, complete, and in this stage in a lesson the teacher is only too liable to dissipate any initial conation. No teacher can do more than anticipate

a few of the obstacles to current receptiveness which will arise, and the greater and most important part of the uniting of old with new in the pupil's mind will inevitably take place during, or after, the stage called Presentation. And here it is essential to remember that the pace of progress, if progress is to be in any sense real, must be governed by the rate of movement of the pupil's ideas and meanings. Probably the most frequent cause of all failure at this stage of teaching is a tendency on the part of the teacher to hurry and force the pace, with results quite destructive of receptive process. All is so clear to the teacher; the ideas involved in his lesson are not new to him: they are free and plastic, and their movement is rapid; but in the pupil's mind they do not exist at all in the form required: they have to grow, and the elements new and old which are to form them are none of them clear at the outset, nor have they the plasticity and rapidity of movement which comes of frequent use. Slow movement is inevitable; it is not to be bewailed, but to be desired—mind growth (and any real progress is impossible without it) demands it. To hurry means to deform the mind as an intellectual instrument, and debase it as a moral agent, for there can be no sound character without solid and thorough foundations, and intellectual and moral thoroughness are not things totally separate.

Hence the conclusion that hurry, and attempting too much in a given time, to which tendency every teacher is continually exposed—and the more so the

keener he is—is a more frequent bar to the right use of receptive process than any other cause ; and next to it comes a lack of comprehension of those elementary facts, already noted, about recipient ideas and meanings, which results in an attempt to foist upon pupils things which they are without the means of grasping.

Wherever this is the case real progress is impossible, and yet to the inexperienced eye apparent progress may be made. The distinction between progress real and apparent is of the utmost importance, for nothing is commoner than a confusion of the two. We have tried to show briefly what the real progress involves—viz., conation strengthening into purpose, final values of growing strength, new and old in meaning and idea, meeting and moulding each other into increasing clearness and increasing freedom. Wherever a step forward in such progress is made, the will is strengthened by the strengthening purpose, the mind is richer by the deepening meaning of ideas, and there is a gain in power in every direction in which the ideas that have been used are to be available in the future. Such learning leaves mind richer and stronger than it found it. But there is a type of learning which does none of these things, except in an evanescent degree, and we shall attempt later to indicate its nature and characteristics. We are hardly in a position to do so at this point, for it would be necessary to anticipate several things which depend on the use made of expressive imagination.

In dealing in a previous section with the general characteristics of mind, we called attention to one of the most general of its laws—namely, that there could be no elaboration in consciousness without some corresponding elaboration of motor adjustment; no series of meanings, or ideas, or of any kind of conscious products, is complete until it has found some kind of motor expression. Differentiation in consciousness and differentiation of motor response thus go hand in hand. The need for expression of meaning is thus basal and primary, and expressive imagination is one particular example of it. It is therefore essential that room should be found for it in all teaching. Vague, incomplete results may indeed be produced, even if no formal place is found for it by the teacher; for in proportion as they learn anything pupils will themselves find some mode of motor expression—emotional perhaps, perhaps muscular, partly in school, partly out of school—but no teacher can rely on the effects of such haphazard expression. The teacher needs, not *any* kind of expression, but a kind that can be interpreted, such as will acquaint him with the amount of meaning which the pupil has grasped. Emotional expression, as shown in the face and in the positions of the body, have for him their value; they tell him of the moods of the pupil, alert or indolent, interested or vacant, puzzled or comprehending, and many teachers become exceedingly expert in the judging of these signs, which are of importance and deserve the attention of all teachers.

But such signs, valuable as they are, are vague; the teacher must have signs which give an accurate indication of the amount of meaning grasped, and the amount of error remaining, and words are here by far the commonest and often the only possible gauge.

Thus, for the teacher's own sake, and for his narrower, practical ends, it is essential that a place should be found for expressive process.

But for the learner's mind expressive imagination must have its place, and an ample scope for its play, not merely for the sake of some immediate and practical end, but because it is a necessary condition of mind growth. Just in so far as receptive process has been at work, the need for expressive process will be felt. Each little series of meanings or ideas which in the course of receptive process passes through consciousness has its own need for expression, strong or weak, just in proportion as the conation connected with the receptive train was strong. The learner needs to assure himself of his own acquisition and to test its quality, and can only do so by some form of expression. A few common instances in which the expressive process involves, not words, but deeds—though in a wide sense words themselves are deeds—may make this more evident. Let a child be given a new toy, a hoop, or a paint-box; just in so far as from looking at it the child understands it, there arises immediately a desire to use it, to experiment with it, and impatience and disappointment if the opportunity

is not at once forthcoming are often extreme. Or supposing that in play a companion performs some small muscular feat, the child will at once want to imitate it, reproduce it by his own effort and his own muscles. How often the words 'Let me try,' 'Let me see,' are on the lips of children, and they are, as a rule, not the expression of mere curiosity, but at once evidence that receptive imagination has been at work, and that expressive imagination is needed. But it is not every gift, every new thing seen, which at once gives rise to this need in children or in grown-up people. It is equally common for a gift to be received with disdain or indifference at first, and encouragement and diplomatic waiting is often necessary before any use is made of it, and its value grows gradually from its use. In a similar way a new bit of meaning, a new idea, is a gift to the growing mind, an alienable possession which may become a permanent possession. Sometimes it is welcome and appreciated at once, and then the impatience to express it, to play with it, to use it, may be intense; sometimes its welcome is only lukewarm—it is received with indifference, and then, if it is to be appreciated, the learner must be persuaded somehow to try and use it and experiment with it, otherwise there can be neither a sense of possession nor an appreciation of its value.

Sometimes in the course of his teaching the teacher has things to impart which are immediately welcomed by pupils as filling a felt want; the new ideas fit into a conative train of strong final value,

and in that case the pupil's mind impatiently demands opportunity for expressive process; and supposing that the teacher does not provide the opportunity, although disappointment is inevitably felt, little real harm is done, for the pupil will himself make opportunity as soon as he is free to do so. But an experienced teacher will readily admit that fortunate circumstances such as these are quite exceptional. A very great deal of what is taught and must be learnt meets with no warm reception, and rouses at best fleeting and wayward trains of conation. For this neither school, nor teacher, nor pupil is to blame. It is quite inevitable, for the things which must be learnt are not determined solely or chiefly by the likes and dislikes of learners, but by the demands of that society in which the learner must play his part, whether he likes to or not. Under these circumstances, the provision of a place fo expressive process immediately following upon receptive process becomes imperatively necessary. Pupils must know and take for granted that they will be expected themselves to find expression for all that they are called upon to take in, and this knowledge at once reacts upon their attitude in receiving, quickening interest and rousing attention. It is here that the connexion between discipline and progress is so transparently obvious; for good discipline, among other things, secures this—that pupils have a rooted conviction that they are expected to learn what is set before them, and that to learn is for them the line of least resistance.

There is no need to plead for recognition of this latter fact ; it is only too fully recognized in our educational practice of to-day, especially in our secondary schools. The whole system of marking, of set tasks for home work, of periodical examination test and class order, together with occasional impositions and detentions—all these are intended to secure a conviction in the pupil that learn he must, whether he likes it or no. But none of them will take the place of the expressive process of which we are speaking, and none of them necessarily involve it.

Expressive process can only be secured with young pupils by finding a place for it absolutely immediately after receptive process has been at work. Its function is to catch the meanings just acquired in their unformed state, where they resemble rather a mass of meaning than a series of connected ideas, and transform such mass into an expressed series. Such a series sometimes grows out of a mass of meaning when an action is performed ; as, for example, in needlework, or drill, or drawing, when the pupil at once performs some new thing which he has been shown ; or, again, in chemistry or physics, when a concrete experiment is set involving facts—*i.e.*, meanings and ideas—previously pointed out. The action done itself falls into a series of steps in which meaning is expressed, and in the very act of expression the meaning gains clearness as well as added detail. But in a great many subjects, especially in the native language, in history, in parts of geography and of mathematics, it is not

possible to embody meaning at once (if at all) in such a series of acts. In that case language is the only possible form of expression. Now, it is exactly here that our teachers, whether primary or secondary, lamentably fail, and fail, not from lack of energy, earnestness, or preparation of work to be done, but very often, paradoxical though it may appear, from excess of these. In eagerness for quick progress they not only present what is new, but when they question pupils upon it, take the answer out of pupils' mouths, and insist on doing themselves work which the pupils must do, and do aloud, if real results are to be obtained. The most fatal mistake at this stage of teaching is over-anxiety about the correctness of the form into which pupils cast their meaning. The first and necessary requisite is that the pupil should express his meaning in *some* form of words, however imperfect, and that that form, such as it is, should be of his own choosing. That this first form will be imperfect goes without saying, and the transformation from an imperfect to a correct form is inevitably a slow process, for it is not here a question of substituting for an incorrect word series a correct word series ; if that be all, it is pure verbalism, a form of perceptual process not worth acquiring, and of no use when acquired. The task is to develop an incomplete ideal series. The first verbal form in which this series is expressed will probably have to undergo several changes before the ideal series is clear or complete. The teacher's business is to see to two essential things :

(1) That every change in form represents a change in the ideal series—*i.e.*, in the pupil's meaning; and (2) that no change at all is made until the pupil himself realizes that it is necessary; when he does so he will probably be in a position to make the change himself.

It is the part or parts of a lesson devoted to this process which are at once the test of a teacher and his opportunity, for it is here that the art of questioning finds full scope. But the type of questions needed are not such as impart information, but such as will convince the pupil that his expression does not represent either fully or correctly his own meaning, such as will bring into prominence aspects of meaning which have not so far in his expression split away from the mass to find their place in the series. Any fault-finding, in the sense of rebuke for what is wrong, is almost always out of place here. The pupil who has made his effort at expression—and for him, if made at all, it is a real effort—needs rather to be congratulated for whatever is right in it and encouraged to continue. Except for this purpose the teacher has no right to interfere at the outset, and throughout his part is to be silent except when a word in season may further the process. Only those who have had practical experience in teaching can realize how strong the temptation is to the teacher to do more than this, to himself complete the faulty statement, and in effect to do for the pupil, with the idea of saving time, what the pupil with time can do for himself. But to yield to this

temptation is fatal, for it means that expressive process is cut short, and at the very best a new section of receptive process substituted for it. This may, indeed, at times be necessary, but it is evidence that the previous receptive process has been a failure, and must be repeated, and in that case it is equally necessary to repeat the expressive process also, and there is obviously no saving of time in any case.

The very close relation between receptive and expressive process must by this time be evident. Expressive process is not only the best test of the success or failure of receptive process, but it is its natural completion, and brings home to the pupil the measure of progress actually made, as well as making him realize how much still remains to be done before the new acquisition can reach its full use as a new possession. It always involves real effort on the pupil's part, and this very expenditure of energy gives an added value to the new subject. It will very often be found that ideas which are at first unwelcome make for themselves, through it, a natural place and abode in the learner's mind.

One of the most difficult matters in practice is to determine the length of receptive process allowable before expressive process comes in to complete. Educational theory can here lay down no rules for guidance, but can at least emphasize one or two very important facts.

Capacity to follow a lengthy train in receptive

process is a characteristic of a trained mind. The span of attention is then at its maximum. The trained mind, too, is capable of dispensing with overt expression; it can review what has been comprehended mentally without putting it either into spoken or written words. It can postpone expressive process with little risk or loss, though, as a rule, it will be found that even those whose minds are highly trained prefer to test their comprehension by spoken or written expression, and if the train be on an unfamiliar subject will insist on doing so. Every student who finds he can learn more quickly pencil and notebook in hand as he reads, or, again, the student who finds he can profit most from a lecture by giving full attention to it as it proceeds, and afterwards puts into writing the substance of it in his notebook, are in different ways examples of these facts. But the school-teacher always deals with pupils whose minds are more or less untrained, and whose span of attention in any subject is consequently short, and nearly always, too, with subjects which are, partly at least, unfamiliar to his pupils. Hence the necessity for short sections of receptive process, followed at once by some form of expressive process; and the teacher is far more likely to overestimate than to underestimate the desirable length. There is scarcely any point in the practice of teaching which needs more careful watching than this.

Whatever the stage in training of the pupil's mind the span of receptive attention varies with the nature of the train to be received. As extremes

we may compare the span of attention in reading a novel with its span in doing a proposition of Euclid. There are many degrees in the length of receptivity, and it varies with the varying subjects; and viewing the matter from the standpoint gained in those previous chapters, in which we have discussed the nature of ideas and their connexion with conation, it is not difficult to see that capacity to follow with ease a complex train in one subject or more is not transferable or at once applicable in another and different subject.

Though these facts must here be noted, it is not possible to follow them up or illustrate them with the fullness which they deserve, for that would involve a comparison of subjects and a study of them in detail—a task altogether beyond the scope of our present purpose.

Throughout what has already been said upon this point, the form of expressive process emphasized has been that in which words are the medium of expression. About three-quarters of the work done in schools at present is concerned with words, and much has been made both in theory and practice of the importance of oral teaching; yet failure in the right use of words and misunderstanding as to their function lie at the root of the prevalent failure of our schools to produce and foster mind growth. In the current practice of oral teaching pupils are almost passive, and teachers overexert themselves. Forms of expression, instead of being found and gradually perfected by pupils

themselves, are given ready-made by teachers or text-book, and repeated until known by pupils; a form of words is acquired and can be produced at will, but there can be no guarantee that the pupils' meanings have moulded themselves into clear ideas. Pupils so trained—would not 'drilled' be a better word?—may repeat or reproduce in writing correct answers faultlessly expressed, and yet have only the vaguest conception of their meaning. Prolonged subjection to such teaching produces a type of mind only too common nowadays, which is the despair of the real educator. The idea the pupil has of home work is to pore over a text-book till certain phrases or names have clung to the memory; in school his mind is torpid as a stagnant pond; in the face of any difficulty he waits helpless for the teacher to resolve it into another form of words to be stored in the lumber-room of his mind, and if he does not learn ('get on,' as he puts it) it is sure to be 'the teacher's fault.' Such learning as does take place scarcely rises above perceptual process, and the power to exercise any higher process is gradually lost. Most disastrous of all, the pupil is all the time under the impression that he is doing his best, and his idea of work becomes synonymous with his idea of drudgery.

Teachers of any experience will not find this picture overdrawn, and under present conditions the teachers are not wholly responsible for it. The conditions prevailing in many of our schools are such that proper use of expressive process is almost

impossible. It always demands attention to the individual pupil, and what amount of that is possible when classes of sixty to eighty children exist? If we would not have our schools become schools for stupidity these unwieldy numbers must cease. Not theory but practice must decide the maximum permissible size of class, and experience would probably place it at forty for a primary school and thirty for a secondary school. With higher numbers than these the high ideals of teaching are sure to be contaminated by the very different aim of enabling a whole class to reproduce certain strings of words, or mechanically perform certain series of actions.

Even in those fortunate schools where manageable classes are the rule false ideals of what constitutes a school's reputation lead to a straining after examination successes, and the pace of teaching, in consequence, is forced; and in such hurry expressive process, which always demands most time, is the first to suffer, and though much knowledge for the moment may seem to be attained, it is at best *ἀγώνισμα ἐν τὸ παρόν*, instead of a *κτῆμα ἐς ἀεί*.

We have next to deal with the practical uses of reproductive process. It appears to have two main uses: (1) To consolidate into firmly knit wholes series acquired in receptive process, so that when needed they can be called in, and run their course with ever-lessening strain of attention and ever-lessening expenditure of energy; (2) to introduce either whole series or parts of series, already

acquired, in connexion with slightly varying purposes, with a view to giving to the ideas and meanings contained in them a greater scope of usefulness, or, to use terms employed in a previous chapter, to secure for ideas and meanings greater freedom. Both of these types have their necessary and legitimate place in all teaching, but the latter is of infinitely greater importance for mind growth than the former, and far more liable to neglect. The former involves repetition of a series without change ; the only purpose connected with it is to gain its own immediate end, and except for that end its component parts have no value at all. It nearly always involves an element of drudgery or grind, and the sooner it is over and done with the better. Illustrations may be found in most school subjects. Thus, the child has to learn off his multiplication tables, the spelling of certain classes of words, certain lists of important names or dates ; later on he will have to learn his Latin declensions, and paradigms of verbs ; later, again, his mathematical formulæ and chemical equations, and so on.

The teacher is constantly coming across things about which he feels he can only say, ' You must learn this and remember it.' This notion of ' learning ' is very often the only one a pupil seems to understand, the only process of working which, if left to himself, he knows how to apply. Its very uninterestingness seems to give the pupil a conviction that he has been working hard, and therefore done all required of him. It does indeed involve

expenditure of energy, and so far he is right; but it is expenditure at the very lowest level at which expenditure is possible, and is a call upon the mind's retentiveness and nothing else. Just in proportion as the process nears its goal, expenditure grows less and less, and when the end is reached, the only expenditure required is usually one of lip and mouth muscles.

Now, it would be easy to pour scorn upon this type of learning. And where it is the only type in vogue the result is indeed disastrous; but we have here represented it as coming after both receptive and expressive process, and here it has beyond all question a useful and legitimate place. There are hosts of things in every subject which, though they may at first be learnt at a high level of mind working, must ultimately be retained and recalled at the lowest possible level. Progress would otherwise be impossible. Text-books or teachers very tersely arrange such things in lists, and insist on them being known, so that they are reproducible without thinking. Simultaneous repetition by a whole class, singing, even *memoria technica*, have all here their use. Because a mind can use a high process, there is no reason why it should not also use a low one. Because a child can walk, there is no reason why he should not also creep, nor because he can run also walk. Moreover, work of this purely rote character has a pleasure of its own to young minds. To the grown man, who feels that his retentiveness is anyhow overburdened with calls, the idea of

exercising it, and it alone, is naturally distasteful: often he cannot do so without very great effort; but the young child often rejoices in exercising a retentiveness which is fresh and of growing strength, much as he loves to exercise his muscles, apparently for no purpose whatever beyond the mere movement. The practical teacher does not need to be told all this: he knows it and sees it daily; but we may perhaps be excused for reminding some educational writers of this aspect of things, for they are inclined to be too harsh in their condemnation.

The essence of this first type of reproductive process is the learning by heart of some series of words, expressing accurately a meaning (or series of meanings) which has already been grasped—not fully, perhaps, but at least to some extent. Such learning is learning at its lowest level; in the actual acquisition, except in the case of very young children who learn in chorus, the teacher has no part to play; the pupil learns by heart best and quickest by himself and alone, and sometimes cannot learn in the presence of others. The responsibility of the teacher lies in selecting what has to be learnt, and seeing that, before the task is set, the pupils know what the words to be learnt mean, and realize to some extent why they must be learnt. Some amount of receptive and expressive process, preceding the learning by heart, is essential. Examples will occur to the teacher drawn from almost every school subject. In arithmetic, tables —such as the multiplication table and tables of

weight and measure—must eventually be learnt by heart, but a great deal of work in receptive and expressive process ought to precede. Pupils must have already grasped how a table is constructed; it must have already been illustrated by numerous concrete examples; they must already have been given copious *viva voce* practice in its simple application—they must know, that is, what it is about and why it is important. Their knowledge of its uses and meaning at this stage is not, of course, a full one; all subsequent arithmetic will add to it, and subsequent practice will enrich and widen it. Similarly in the case of definitions in Euclid, Geography, Botany, Physics, or Chemistry.

Now, whereas very few teachers are in danger of neglecting to have the definitions, tables, facts, etc., learnt accurately as a form of words, almost every teacher is tempted to cut short the antecedent stages in which their meaning ought to be gradually built up, and their first uses realized. And in class teaching, where there are almost as many grades of intelligence as there are pupils, the danger is an ever-present one; the strong sympathy which the teacher feels for the quick-moving mind leads only too often to a pace quite beyond the slower learners. The teacher imagines that the class as a whole have grasped what has only been grasped by a few, and when the task 'to be learnt' is set, there remain at the lower end not a few to whom the form of words, whatever it be, is verbiage only. Nor are they likely to complain. To the slow-

moving mind to grasp meaning is hard work, and to learn by heart is a relief ; what that means, at any rate, they understand, and to work at that level is for them a line of least resistance, for it is very often less trouble to the stupid child to learn by heart than to the more intelligent. As though to compensate them, Nature seems to have endowed the slow learners with strong and accurate retentiveness. Thus, unless extreme care is taken, the lower half of a class get into the habit of learning by heart things whch they do not understand, and, consequently, cannot use ; and just in proportion as this habit is formed, the school for these pupils becomes a school for the culture of stupidity. Such a habit is as noxious to mind growth as a narcotic to bodily growth.

We cannot here follow up this train of thought into the details of the various school subjects ; that is rather the task of the methodology of each subject, and does not belong to a theory of education. We can do no more here than note a very important consequence. Those subjects—such, *e.g.*, as geometry—which give rise to least reason for learning by heart have, in consequence, a quite peculiar value in the school curriculum. And, on the other hand, such subjects as geography and history, which easily become mere verbal series of space or time, are subjects most often badly taught, and, if badly taught, injurious rather than helpful.

It remains to consider shortly the second and more important type of reproductive process—viz., re-

production of part or the whole of an acquired series of ideas expressed in words in connexion with varying purposes. Examples will best make clear its scope and importance: (1) In arithmetic, the relation of numbers to each other expressed in a multiplication table play their part again and again in new order and in new connexion in every sum done throughout arithmetic. As learnt in a table, *e.g.*, 5×6 follows 4×6, and is followed by 6×6. As occurring in a sum, these number relations occur in any and every order, and the tables are broken up in fragments revivable at need just in proportion as they occur separately. Not only is this the case within a series and in connexion with its parts, but the whole series—*i.e.*, the process of multiplication—acquires new uses, new meanings, with every new problem and every new process; as illustrated in fractions, multiplication, addition, subtraction, and division, all get an added meaning. Decimals ought to add new definiteness to what notation means, and so on. The same elementary arithmetical processes ought to receive extended meaning when they reappear in algebra with letter symbols instead of numbers.

Mathematical subjects supply unending opportunity for this growth of meanings, already partly grasped by the new purposes which they serve, and new ways in which they are presented. The aim of good teaching will, of course, be to see that the connexion between what is already familiar and what is successively met with is apprehended.

Unless particular care is taken with these points of transition between topic and topic, the new dress in which the old fact occurs so completely disguises it that the pupil mistakes it for something quite new, and as soon as that is the case the subject ceases to be a connected whole : it falls into a series of disconnected parts. Let us take as our second illustration an ancient language. The close of the first stage is, of course, the mastering of paradigms of declension and conjugation. In accordance with the preceding section on the first type of reproductive process, some preliminary knowledge of what a case and a tense are is essential, as also is some very simple practice in the use of tenses and cases (*i.e.*, in expressive process). The first step completed—and it may take a considerable time, quite a series of lessons—the paradigms are learnt successively by heart. No sooner is this task finished than the application in sentences is continued ; each of these sentences in itself forms a short purpose in which cases and tense play their part ; in each of them bits of paradigms appear in ever-varying order, and the capacity to use both cases and tenses gradually grows, and with it the meaning of cases and tenses themselves. These paradigms are to the language what the multiplication table is to arithmetic—indispensable as a preliminary, but perfectly useless unless split up. The preliminary sentences used for practice are, of course, artificial, more so even than are the early sums done in arithmetic. From this artificiality it is almost impossible

to escape in arithmetic (though when arithmetical processes are used in connexion with another subject—*e.g.*, calculation of areas of actual figures, as in a course preliminary to geometry—some approach to natural application is made). But in a language it is possible very early to get away from such fragmentary and artificial embodiment of meaning, and it is obviously the duty of the teacher to do so. The sooner simple, continuous translation can begin the better, and when begun it should, of course, form the main basis of teaching. The purposive character attaching to the detached and artificial sentence is at best fragmentary, and often purely formal, and that attaching to the continued piece is natural. The continued piece may have a value both immediate and final; the detached sentence never has an immediate value, and its final value is often too remote to be appreciated. I speak here, of course, of those detached sentences with which all are so familiar in the usual grammar and exercise book. Such books are, according to the view here taken, bad as a means of learning new work, and good as a means of revising old. The detached sentence made on the spot to illustrate some obscure point in translation serves an immediate purpose: its final value is not remote, but close at hand; it fulfils a real want in the learner's mind, and, as such, has a good chance of being retained and used. It is surely obvious by this time that a language offers a scope more varied even than arithmetic for extension and acquisition

of meaning under varying purposes, and it has the further advantage that the purposes in which the meanings are embodied are natural.

We have taken our two illustrations, the one from mathematics, the other from an ancient language, because these subjects have been longest taught, and their methodology is fairly fixed and complete. Similar illustrations might be taken from every school subject, but they would in all probability involve us in a host of questions still controversial, and with such this is no place to deal.

It will be plain already that our second type of reproductive process brings us back into that receptive process with which we first started, when old and new blend together to form new meaning. These three processes of imagination which we have described are a cycle which repeats itself again and again as learning proceeds. We have treated of each separately for the sake of clearness, but in practice it will always be found that they overlap and run into each other; their separate treatment serves to emphasize the fact that, at one period of learning any new thing or series of things, the receptive attitude is the prominent one, at another the expressive, at another the reproductive. This order is a fixed one. No new thing can be learnt except in receptive process where old and new blend; no meaning thus acquired can reach to such clearness as to be worthy the name of idea until it has clothed itself into some form of expression.

No idea is either worth learning or worth expression which will not be reproduced and used to deal with new purposes which environment, natural or artificial, presents, and no series of ideas ought ever to be worked into a stereotyped form of words to be learnt, unless it is destined to be used in its turn as one item in a larger whole of thought. The vitalizing part of the whole process is conation—at times a blind and puzzled striving, at times enlightened by a ray of insight, at times rising into clear purpose, but always that which connects, that which calls retentiveness into play, that which educates; for by its activity alone the strong will can be formed.

CHAPTER VIII

REASONING AS MIND'S HIGHER PROCESS

Treatment of the Reasoning usual in Psychology and Logic discarded as unsuitable—Mind follows line of least resistance—Conation and Reasoning—Conditions necessary to call forth 'Thought' considered and illustrated—'Systematic' experience—Reasoning develops first out of school—Conditions of its growth in school—'Class Reasoning'—Essential character of Reasoning as a process—Relevancy of Thought and accuracy of Thought—Analysis and synthesis in Reasoning.

THE processes described in the last chapter are those under and through which ordinary school learning takes place. For the most part, what is learnt is not the unaided discovery of the pupil; he takes in what is, in the first place, a heritage of knowledge, acquired and treasured by past generations, and handed down to the present as a possession. What has to be learnt is settled for him beforehand, partly by former generations—*i.e.*, custom and institutions—partly by the demands of the society in which he is to play his part, partly by his own individual tastes. Nor is this all: he is not left to attack in his own way the task of acquisition before him;

he is guided and helped at every step by a teacher whose business it is to arrange and grade the material for him in such a way as will smooth over every difficulty that can be foreseen, and explain any unforeseen difficulty that may at any time arise. What is required of him most is docility—*i.e.*, quick receptivity—and this quality is not the same as reasoning, nor does it necessarily either lead to it or involve it.

This is, I think, one cause among others why the best pupils at school often do not turn out either the most useful or successful in after-life. For life demands of the mind other qualites besides such docility as leads to successful acquisition of knowledge. It is one thing to understand what other people have done—*i.e.*, acquire knowledge under guidance, and reproduce it in the same or a similar form—and another to be able to do things oneself. Life needs most, apart from moral qualities, this latter quality, and it seems at times as though our schools were so occupied in feeding receptivity with subject after subject that the high aim of education, to fit for a full life, is forgotten and crowded out. Complete living, of course, demands many things of which we have as yet designedly said nothing, for they belong to the emotional or moral side of mind, and concern those immediate values which were several chapters ago put on one side for future consideration, as things which may be learnt, but cannot be directly taught. With these we shall not at present deal at all fully, though some allusion to

them has already been necessary in taking in rising succession different levels of learning in which mainly final values are concerned, and will be again necessary in treating of the highest level—namely, Reasoning, or, as we should call it, Thought Process.

We must not look for any hard line of transition between Thought Process proper and those processes of imagination described in the previous chapter; for mind growth knows no sharp transitions; the higher process emerges gradually and fitfully, now here, now there, from the lower. Still less must we imagine that Thought Process is in any sense a product of school teaching. If Thought Process could not originate outside school life, there would never be any real thinking at all. The utmost that can be expected in this matter from a school is that it should provide scope for the exercise of thought, and situations calculated to stimulate it in ways which will be of use in after-life, either directly or indirectly.

Both Logic and Psychology have a great deal to say about Reasoning. To what extent is their treatment of it likely to be of value for our purpose? It would seem at first sight unnecessary to ask such a question. Surely if, as all teachers acknowledge, it is one of their chief aims, one of the greatest difficulties, to get their pupils to 'think,' they cannot afford to neglect anything that Logic or Psychology has to say on the subject of Thought. It is very usual to take the answer to the question here raised for granted. Yet there are in reality two

questions quite distinct from each other. The first is this : Are Logic and that part of Psychology which deals with reasoning a useful and fit subject of study for a teacher ? and the second : Has Logic, no matter how treated, or Psychology, as it is usually treated, much aid and guidance to give in forming educational theory ? The first of these questions is hardly germane to our present purpose, nor, in any case, would we feel inclined to take any but the usually accepted view. Without some training in Logic and some study of the methods of current Psychology, no one could be in a position to understand educational theory. Both Logic and Psychology are likely to hold in the future a more important place in higher education than they do at present. So valuable is Logic as a mental discipline that its analysis of scientific method will probably before long be generally recognized as an indispensable part of a scientific training. A study of Psychology, too, will be recognized in time as a useful preparation, not only for the school, but for the Bar, the Church, and the medical profession. Both are, however, subjects the study of which demands considerable maturity of mind, and it is quite possible to devise a useful and efficient course in the study of school methods without introducing either.

The second question is, for our purpose, a very important one, and everything here depends upon Method. Logic is not primarily concerned with the process of Reasoning, but with its validity. Hence

it deals, not with process, but with products. In order to test the products of thought, its method is throughout analytic : it classifies types of reasoning, reduces them to their simplest forms. It examines separately the parts of which a train of reasoning is made up, and is thus led to a separate consideration of propositions and of terms, with a view to a classification in each case. It is concerned in this treatment with extremely abstract and philosophic topics—such as the nature of inference, of judgment, and of the ultimate laws of thought on which validity depends. The logician distinguishes two main types of valid inference, the inductive and deductive, and, using symbols to illustrate each, he draws a hard-and-fast distinction between them, although he would acknowledge that it would be extremely difficult to say to which of the two types a concrete bit of the reasoning process belonged. Now, unless the whole standpoint taken hitherto in the course of this inquiry be mistaken, Logic is precluded by its very method from giving to educational theory the aid which it needs. The teacher has nothing to do with reasoning as such ; he is face to face with a number of minds, and educational theory must treat them as wholes. Reasoning is one phase of mental life—an extremely important phase, it is true—but the teacher's difficulty is not so much to get his pupils to reason correctly as to get them to reason at all. If he can once cause the minds with which he deals to assume the phase called Reasoning, his battle is as

good as won ; the resulting products may not at the outset be correct, but the reasoning process is such that it will itself correct them if it be persevered in. The mistakes made by thinking, and thinking wrongly, are as nothing compared with the mistakes made by not thinking at all, or not thinking enough. It is true that the teacher needs to have a very sharp eye for the detection of incomplete thought, and that a study of Logic may aid him in securing it, and so far Logic contributes to the efficiency of the teacher ; but that is a different thing from contributing to a theory of education. What is termed incorrect thought should rather be called incomplete thought, for the remedy for it is always further thinking.

Hence we shall not seek to obtain aid from Logic, nor further discuss the topics with which it deals.

Similar considerations preclude us from attempting to utilize that type of Psychology called analytic. The scientist, in his investigation of light, uses a spectroscope, and splits the white ray into rays of various colours ; but the fact would scarcely be of use to anyone who was concerned with white light only. Similarly, the psychologist splits the white light of reason into various processes, and examines these separately, and this investigation is not of use to the teacher, because he always gets them blended together. All the processes which the psychologist distinguishes as contributive or formative of reasoning are exercised by the child

at one level or another, in one direction or another, by the time the child reaches the school age.

These same blended processes the teacher can only utilize. The mental processes used by the child out of school are the same as those used in school; the difference lies in the conditions of their use and the direction in which they are used. These considerations are all very obvious and of negative value only. A theory of education has nothing to gain by following the psychologist in his separate treatment of processes involved in judgment, discrimination, comparison, and conception.

The questions relating to reasoning with which we are concerned are more general and less abstract. In what does reasoning as a process differ from those processes of imagination which we considered in the last chapter? What conditions must be fulfilled before its exercise in any direction can be expected? To what extent, if at all, is the capacity of the mind to reason in one direction utilizable in another and different direction? What exactly is meant by calling reasoning the highest in the scale of mental processes? Such, briefly stated, are the questions to which we must find some sort of answer.

CONATION AND REASONING.

In dealing with the three types of imaginative process, we found that each involved conation in a different way. In receptive process, the conation, however strong, is at first vague, and only becomes

purpose as it reaches completion ; in expressive process, purpose is clear in its main end at the outset, and as it runs its course it gains in clearness of detail or clearness of its several parts ; in reproductive process, conation is effort to recall, and the easier and more habitual the recall, the less the purpose involved. These processes are normal levels of intelligent mind working. As distinct from them—at any rate, in the immature mind—reasoning is the emergency process, never called upon if there is any other and easier way of dealing with the emergency ; yet it cannot be said that reasoning involves a greater expenditure of energy, a stronger conation, than any of the alternative processes which are substituted for it. These, indeed, often involve infinitely more effort and more time than it would take to 'think.' It is rather true to say that the kind of effort involved in 'thinking' is either more exhausting or more distasteful, and always more unusual, than the possible alternative to it. Our mental currents tend to run along the lines of least resistance, and alternative ways of meeting a difficulty are usually lines of less resistance than thought. Moreover, cases which rouse one mind to reason may well be met by another mind without reasoning at all. In this matter it will aid to take one or two examples as typical, for they will help us to get a clearer idea of the type of conation involved in reasoning, as well as of the conditions upon which reasoning depends. A dog which, for the sake of argument,

we shall assume to be incapable of reasoning, finding himself face to face with a difficulty—*e.g.*, with a piece of biscuit placed too high for him to reach—expends his efforts in futile attempts to reach the biscuit by jumping, and he barks the while, partly because barking is the expression of his excitement, and partly, possibly, because barking has solved many difficulties in the past by bringing his master to his aid ; but if the jumping fails he is at a loss. A child very early has learnt to solve such difficulties by climbing, or by bringing a chair or a ladder to his aid, and this, too, by imitation or by aid given him in the past. The child in a difficulty has a choice of chains of perceptual process, which he can apply to solve it. He will pause and go through them mentally before applying one or another; he will reject the idea of climbing, without actually trying it, because he sees there is no foothold; he may try to reach for what he wants by getting on a chair, and if that won't do, he will fetch a ladder. Thus, the child has different ideas of several solutions; he can reject them without putting them actually into practice. The idea of the end to be attained suggests to him ideas of the means, and does so without effort ; they come into his mind when face to face with a difficulty, and in proportion as they do so there is no need for him to reason. The process by which he attains his end is imaginative process. But the fact that he can review his alternatives beforehand differentiates his mind from the perceptual level of the dog.

Now, suppose that the child is faced with another type of difficulty. Suppose him to be given a bobbin and asked to find out how far it is round it. He may not understand at all what is wanted: he may be quite unaccustomed to measuring anything, and, in that case, he can get no further; or, if he does understand what he is asked to do, he may not want to do it; there is no conation towards the suggested end, and in that case he does not care to try to solve the problem. Supposing him to understand the end, and accept it as his end, and to be accustomed only to measuring a flat surface, such a problem will make him try to think. He will see without trying that his ordinary ruler will not do; he cannot bend his ruler round a circle. If he has seen a steel flexible ruler, he will probably try that, and find that it is not flexible enough. If, unaided at this point, it occurs to him to take a piece of string, measure with that round the bobbin, and then measure the string required upon his ruler, he has succeeded in attaining his end by reasoning. If he has to repeat the same experience, he will do so without reasoning, and his action will be merely in reproductive process; and if he, in the first place, had not had to face the difficulty for himself, if some too ready teacher had been at hand to show him how to solve it, he would indeed have learnt the same lesson, but he would have learnt it without the trouble of thinking for himself, and his learning would involve that receptive process dealt with in the last chapter.

Let us take an example now from a different sphere of learning. Suppose that a schoolboy is asked to answer the following question : An island is situated N. lat. 21°, W. long. 75°. What are its probable climate, prevailing winds, and products ? If he happens to remember that the latitude and longitude are those of Cuba, he may proceed to describe Cuba, merely reproducing what he can remember of it ; and he need not have any knowledge of latitude or longitude, or the relation of climate to position. If, however, he does not recognize the position given as Cuba, he can still answer the question, but only by first interpreting the latitude and longitude given as at such and such a point on the globe north of the equator, within the tropics, with an island climate, exposed to the north-east trade winds, etc., and proceed to deduce from these facts a number of others connected with tropical vegetation and products. In so doing he is reasoning. Let him interpret his data wrongly, he may still reason, but give a completely wrong answer.

An analogous example may be found in the case of the schoolboy who tries to construe a Latin line—*e.g.*, ' Odi profanum vulgus et arceo.' If he is sufficiently advanced to read it off into English, or if somebody tells him the meaning at once, he has no need to think, for there is no difficulty to be solved. Otherwise he must use his past knowledge to tell him that *odi* and *arceo* are verbs in the first person, that *profanum* and *vulgus* are adjective and noun agreeing, and use his dictionary to find out the mean-

ing. The terminations of the words are his guides in his search for meaning ; the verbs are his leading signs of the direction of meaning. The drift of the meaning dawns upon him at first incomplete, and he has to fit the words into a framework in which at first there are gaps. He may start on the wrong tack, and, finding it impossible to make sense, have to retrace his steps and start afresh more than once. It is quite obvious that at each stage he must think, and that the bits of knowledge which he uses as his tools gain increased precision and readiness in the process.

It would be evidently possible to multiply these instances, but we have already sufficient for our purpose of illustrating the way in which thinking or reasoning is involved in the process of learning. School work in arithmetic and geometry and mathematics generally would supply us with endless examples.

There are certain characteristics which all such examples have in common, and in considering them we shall bring out just those aspects of reasoning with which every teacher is concerned.

1. Reasoning always involves in the immature mind a hitch in the smooth run of mental process ; it involves an effort never made unless in the face of a difficulty ; there must always be a problem to be solved, the solution of which is not for the moment apparent. This element of difficulty admits of many grades—that is, the sense of difficulty felt may vary from a vague curiosity to an intense desire amount-

ing to impatient irritation. At its weakest, it involves something unexpected in environment which arrests attention ; at its strongest, a barrier which must somehow or other be surmounted. Such difficulties present themselves to the young child very early in life—at any rate, long before he meets with them in school.

2. If we symbolize the situation demanding reasoning for its solution as S, the cue to the direction of solution must always be found in S, and the first step towards a solution involves an analysis, a splitting-up, of S. But this analysis is never random ; it must always be directed by a clear idea of the desired end. A concrete instance will make this apparent. If S be a clock that will not go, the desired end will be to make it go, and the examination of the clock is directed by the purpose of finding out what prevents it from going. If we call the desired end P, the element of reasoning is always the same—viz., in S to find something, which we may symbolize by M, which will give P. Let us omit M for the moment, and consider S and P only. S is in every case given. The situation which is to give food for thought occurs in environment—an environment either devised by the individual or occurring independently of him ; but its mere occurrence is by no means in itself sufficient to secure its being dealt with. It must be recognized by the mind to which it presents itself as a problem calling for solution. In other words, it must clash or form a contrast with ordinary experience ; it must, that is, be

seen to be like or unlike some previous situation or fact of past experience ; it is seen to contain within itself elements both known and unknown. Whether it calls for reasoning or not depends, on the one hand, upon whether previous experience is sufficiently systematized to provide the data necessary for the process of analysis, and, on the other, whether the situation itself has *a value* sufficient to call forth the energy necessary to solve it. These two conditions demand some further examination, for both of them continually arise in the course of teaching, and the success of a teacher is very largely dependent upon his understanding them, and recognizing and using them when they do occur.

The term 'systematized experience' has been used, and it is one that requires some explanation.

Experience is systematic just in proportion as it has resulted in the formation of ideas which are interrelated, and by use in receptive and expressive processes have attained a content which is clear and definite. In attaining to clearness, such ideas naturally free themselves from the particular bits of experience in which they first arise, and become more readily available for use in interpreting new situations. Without such readily available ideas, moulded into clearness by previous use, reasoning is impossible ; and in calling upon any mind to reason, a teacher is thereby assuming that such ideas are already in its possession. The assumption proves often quite unjustifiable, and the appeal accordingly fails. The trained mind in this matter differs from

the untrained or partially trained. For when face to face with a situation which it has no means of solving, the trained mind proceeds to a further methodical examination of the situation, with a view to acquiring those clear ideas which it does not at present possess, and which are necessary for solution. The trained mind has acquired by practice a power of methodical observation and experiment, and is thus very largely independent of a teacher. The untrained mind has no such method in observing. The trained mind has behind it a body of experience which leads to an orderly anticipation of what subsequent experience will be. In the light of this anticipation, extraordinary phenomena stand out clear, and by clashing with preconceived notions, they hold attention. But to the child mind all alike is equally ordinary or extraordinary ; the marvellous and strange is accepted with as great equanimity as the everyday occurrence ; there is no orderly anticipation to form a background against which the unusual should stand out. Such anticipation forms quickly in some directions, and very slowly in others —quickly in those directions which are intimately connected with home life and habits, where strong personal desires are concerned ; quickly, too, in connexion with the habitual routine of school life, and personal treatment there, but only slowly and gradually in connexion with school subjects which are actually being taught. In the former—viz., in home life and the routine and personal side of school life—receptive and expressive processes are continu-

ally at work, and clusters of clear and available ideas are accordingly formed. In the latter much practice in receptive and, above all, in expressive process has to be provided before the clear idea necessary for thought can exist. It follows as a matter of course that a child will reason first in connexion with personal interests in home and school life, and later, if at all, in connexion with the subjects of school instruction. Fortunate indeed is the child whose early knowledge of reading, writing, and arithmetic is gained by a natural and imperceptible expansion of spontaneous home activities, and whose personal interests in school treatment extend without jar or break into an interest in the subjects of instruction. Only thus can reasoning or thought process become as natural inside the class-room as it is already in some direction out of school. Unfortunately, few children have homes which lead to that natural spontaneous expansion of ideas which should form the bridge between earliest childhood and instruction proper ; and many suffer from a home environment which leads to thoughts which were better unlearnt altogether. Hence arises a divorce of the activities of the home, which are spontaneous, from the activities which are expected in the school, which are less so. The teacher has to form in the child's mind the very groundwork upon which he intends to build, and the whole process of learning is retarded.

The outstanding fact in all this is that reasoning or thought process cannot be expected in any direc-

tion in which receptive and expressive process have not already been active in building up ideas into clearness of content. It follows that reasoning or thought process first becomes possible out of school, and arises spontaneously, usually in connexion with personal desires, as to which a child very early anticipates experience by ideas of what he considers proper, and where experience very often clashes with his anticipations ; it arises in school, first, in connexion with those points here and there where school discipline touches these strong personal interests, and afterwards, now here, now there, in connexion with subjects of instruction, wherever these subjects touch on points having a connexion with the child's previously formed ideas. But until time has been given for the formation of ideas in connexion with any particular subject of instruction, it is useless to expect reasoning to take place in connexion with that subject.

An illustration may help to make this clearer. One important part of school curriculum is concerned with establishing correct use of the native language. If the teacher's attitude towards this subject be contrasted with the pupil's, it will at once be evident that the teacher, as he reads an author, anticipates not only the meaning coming, but also the expressions ; an ungrammatical sentence or a peculiar construction clashes with his anticipations, and needs either correction or explanation. The pupil, on the other hand, anticipates meanings, but only very incompletely modes of expression ; in connexion

with language as such, the pupil has few anticipations; so long as his mind can gather the meaning of a passage, he troubles little or not at all about the form in which meaning is cast. It is true that a beautiful passage may give him a certain amount of pleasure, but he does not pause to ask why this should be so. A very large amount of expressive and receptive process is necessary before he becomes so accustomed to grammatical expression that the ungrammatical stands out against it as something requiring to be altered; a very large use of ordinary forms of expression is necessary before a great author's departure from them calls for any explanation.

Now, as soon as the normal forms of language have become sufficiently established to make such a background that the abnormal stands out against it, the reading of any good author presents endless problems to be solved, and the pupil is in the position to exercise his thought upon them. If, however, premature attempts are made by the teacher—as they often are—to force these problems upon an unready pupil, the result is certain to be failure, probably followed by distaste for the subject. Our teaching of English, as, indeed, of all languages, is too often vitiated by efforts to force thought process prematurely, and such hurry retards progress. *Mutatis mutandis*, there is no school subject about which the same things might not truly be said, and in nearly all cases the basal fault in the teaching is neglect to make proper provision for the use of expressive process. It is in the lower forms of school

that this preliminary work in most subjects has to be done. It is their function in one subject after another to pave the way for reasoning in the subject, by building up those clear ideas which make reasoning possible. Hence the curriculum and methods of teaching in them are of supreme importance.

Let us turn now to the other conditions upon which reasoning or thought process depends—viz., whether the situation or problem calling for reasoning to solve it possesses a value strong enough to call for the energy necessary to solve it. Reasoning *qua* reasoning has not immediate value for the average boy or girl. The youthful mind is ' an inveterate shirk,' and will not use its highest process if it can be helped. It is easy for pupils to wait and watch a teacher do the work for them which they might do for themselves, easier for the teacher, too, for it is uphill work getting a class to think. No one who has not taught can know how strong to both class and teacher is the temptation to take the lower, easier path of receptive process, followed by reproductive process. There is the delusive feeling on the teacher's part that he is working hard and covering ground, and on the pupils' part that they are learning, and learning something new ; and both of these are true in fact, but the plane of work is a lower one, and an opportunity in educating has been lost. If acquisition of knowledge and the passing of examination tests were the end aimed at it might be thus attained, but if, besides knowledge, capacity to use the mind's strongest instrument

be the aim, such teaching makes it unattainable. Ideas which never play a part in reasoning are but stunted growths liable to fade away; they fail in performing that function for which ideas exist, and which alone, when they have arrived at a certain point of their growth, can prolong their existence and complete it. It is therefore the obvious duty of a teacher in any subject to make such opportunities as the subject offers, graded to the capacity of his class, for the use of reasoning process. He must so manage his work that these problems arise naturally in its course in an order graded to the growing ideas of his pupils. Until his pupils have become accustomed to reason, and are in process of forming a habit of thinking for themselves, he will see that such problems are dealt with in school under his own eye, where he can guide and control, for if they be left to out-of-school work the chances are against success.

Now, if the conditions which have already been enumerated are observed; if the class, as a whole, has ideas to enable it to solve the problem or contribute towards its solution—if, in other words, the pupils understand what the problem is and what is wanted with it, there is in class teaching, as a rule, no difficulty whatever in getting the class to accept it as their problem, and to exert themselves to solve it. It at once has sufficient value; eagerness on the part of individual pupils to start work is the best test of that. But it is a very difficult matter to analyse exactly wherein such

value consists. At the outset that background of pains and penalties which school discipline holds in reserve for the idle may contribute something towards it, helpful just in proportion as it is the merest background, and a positive hindrance as inhibiting the play of ideas by the emotion of fear, if it be allowed to become in the least prominent. In other words, pupils are vaguely conscious that in class they are expected to do their best, and accordingly are ready to do so. This is a part of what may be called the school mood, which it is one of the functions of discipline to produce. That subtle corporate feeling of a class which, though a real factor, defies analysis, and which is rather helped than hindered by competitive rivalry between individual members, probably contributes more, and the stimulating and encouraging personality of a teacher most, to the motive power of the pupils' minds. This is at the outset merely, for as the actual work in unravelling the difficulties of a problem proceeds, all these elements are lost in a final value of gathering intensity and strength, which lasts until a solution is reached, and then dissolves into a feeling of satisfaction at something accomplished.

The foregoing considerations give a very strong reason for taking the beginnings of reasoning in any subject, and with young pupils more than the mere beginnings, in class, rather than leaving pupils to attempt it for themselves out of school. The school mood, with its attendant aids, if properly manipulated, almost guarantees sufficient initial

value to start the pupils upon the higher level of thinking. Out of school and left to themselves, they are without the necessary stimulus, and have many more distractions; while some few may yet succeed in thinking for themselves, the majority fail—not from lack of ideas which, if used, would lead to success, but from lack of stimulus to use them. What has sufficient value in school has little or none out of school. Just as in a previous chapter we found that ideas are often long tied to a particular piece of perceptual process, so attempts at reasoning in a subject are often tied to a school mood, sometimes even to a particular teacher. Such a result is one step forward in thinking, but only the first step; the end is not reached in any subject until the pupil has freed his mind from such preliminary props, and gained control of his own thought process. There is a very great difference between a value dependent on one phase of a changing environment and a value originating in a pupil's mind and under his control. To furnish the mind with many such values is one of the highest aims of education.

Any teacher can easily convince himself that 'class reasoning,' however useful, is only a preliminary step towards these higher ends if he will for a moment consider what actually takes place when a problem is solved by teacher and pupils together in class. At the outset, when the problem first presents itself, there are some few who can solve it at once by reproductive process, who,

accordingly, have no need to think, and do not do so. Others, again, get at the solution with ease by a kind of immediate* inference, and hardly can be said to rise to thought, for the problem does not search their ideas or demand systematic analysis. Others, again, have not the ideas necessary to solve it by reasoning, and learn in receptive process; probably none at all performs a complete piece of reasoning. The solution is built up by a suggestion from one pupil here, another there, and so on; several contribute to a step towards a logical whole, but none composes a logical whole; for let it be remembered that a reasoned argument can be followed in receptive process without thought proper. Such a class exercise is extremely valuable, but its real usefulness does not at all depend on the speed with which the problem is solved, and the logical whole presented complete to the class. Speed in such work destroys usefulness, for it usually means that opportunities have been missed. The average or dull boy, if time were given him, would have made his suggestion; it might have been inept and not helped on the argument, but it would have been a gain to him to make it. Whatever his idea was, it would have been the clearer for expression; it would have been a further gain to him if he had seen it to be inept. In such class work no contribution ought to be suppressed so long as it

* Of course, immediate inference is not here used in its technical sense, but rather for that intuitive leaping to a conclusion which dispenses with a search for the middle term.

expresses a pupil's idea ; its expression is just his opportunity for learning. For, accurately speaking, there is no such thing as collective reasoning ; no mind can do the thinking for another mind ; thought is individual.

It is therefore evident that class work is valuable just in proportion as it paves the way for independent thought. Though again and again necessary at successive stages in a subject, it must be followed up by carefully graded opportunities in school and out of school, where pupils are left to work out their problems (and the word is here used in its widest sense) independently. The teacher's task is to correct mistakes sparingly and encourage with a word of approval even very moderate signs of success. Teachers at present might almost be divided into two classes : those, on the one hand, who are very skilful at collective class work, and, regarding it as an end in itself, neglect to make it grow into capacity for independent thought ; and, on the other hand, those who, perhaps from want of skill, perhaps from want of practice, neglect class work, and throw upon pupils ill prepared for it the task of attempting independent thought, with the result that a few gain and the majority are discouraged, if not disgusted. The real teacher has to try to combine the virtues of both classes.

These considerations have placed us in a position to state the character of reasoning as a process. It will be remembered that we have already made use of the symbols S, M, and P, and have left over

the consideration of M. S is the situation given, P the desired end—*e.g.*, here is a sentence (S). What is the meaning (P) ? Or given so and so (S), find so and so (P) ; or here is a passage of English (S), put it into Latin (P) ; or here is an occurrence (S). What is its cause (P) ?

In all such cases, if reasoning is to take place, both S and P must be intelligible, and there must already be in existence a store of ideas which serve to interpret S, and the direction of thought is already fixed by P. M includes all the steps—and they may be few or many—by which P is reached. If reasoning takes place, all these steps, few or many, must be distinct, and as a result they must be communicable—*i.e.*, capable of being put into words.

This last condition is essential, for many solutions are gained by a kind of intuition (called above immediate inference) ; and many a skilled workman, when face to face with a practical problem, will solve it by a series of acts performed all in the right order, and yet be quite incapable of saying how or why he had done it, and neither of these involves reasoning. Some care on this point is necessary. The reader can probably convince himself, by watching his own mind at work when solving any problem, that there comes a time when the solution dawns upon him, and he can never tell with any sureness how or why it occurs to him. There is an element of intuition or immediate inference in all thought ; a psychologist might, indeed, tell us that the connexion between the previous difficulty and

the present consciousness of knowing what to do is a real one, but takes place in unconscious process; but for practical purposes that does not much assist us, though it may be quite true. To urge a teacher to prevent his pupils from such experiences would be absurd; they are exactly the kind of mind working which he most wishes to encourage. If reasoning is to take place, clearness is required in a different direction. If the solution of the end P is reached by a series of steps, *a*, *b*, *c*, *d*, as a result of thought process, each of these must be distinct, and the reasoner must know what each step contributes towards the end. The practised thinker will not in most cases take the trouble to express the chain of thought in words, though if necessary he could do so. The untrained or partly trained mind—the learner—ought to be made to express the steps in language, and that for two reasons: (1) His teacher cannot otherwise be sure that he has formed any logical series at all; and (2) the very effort of expressing the steps is the means of giving clear content to the ideas used in the chain.

In some subjects—language teaching and mathematics, for example—words and symbols are the only form of expression possible for thought process. In others—chemistry and physics, for example—the different steps necessary to attain the end find expression in concrete experiments, which in themselves form a series of percepts more palpable than words, and lead to a solution which is itself concrete

and obvious. The working out of the solution involves the manipulation in a definite order of a number of objects, and the end can only be attained if the order is the right one and the manipulation is carefully performed. In drawing the end is graphical, and each step towards it also graphical. In geography problems lend themselves, indeed, to verbal solution, as in language, but graphical aids are not only valuable, but often indispensable. In woodwork or carpentry, though the end is the construction in wood of some definite object with certain dimensions, the use of plans—a graphical representation of the steps by which the end is to be obtained—is essential if the work done is to rise above perceptual process.

In connexion with all these different spheres of exercise, thought process is possible, and in its nature in all of them it is of the same character and observes the same laws. Its nature and the conditions on which it depends do not alter with the media through which and in which it finds its expression. The different spheres, indeed, vary in the number of opportunities they offer for its scope, but that is a different matter, not here under consideration. In each sphere there must be an understanding of the end, an acceptance of the end, sufficient value attaching to it, and a set of ideas, varying in length with its complexity, which have already attained to some degree of clearness and freedom. The test of this last condition is the ease with which these ideas find expression, whether

that expression be verbal, symbolical (as in mathematics), graphical, or diagrammatical, or any combinations of these. In some cases one form, in others another form, of expression is the more natural, and it is a mistake to insist on words as the required form if a diagram or symbols are easier to use. There seems to have been for long in our schools a pedantic insistence on verbal form of expression in preference to others, and a consequent depreciation of subjects which do not lend themselves to it.

Given the requisite ideas, and in consequence the requisite power of expressing them, everything else depends on the arrangement of them. They can only attain their end if they are used in a fixed and definite order. Hence there can be no question that modern methods are on right lines when they insist on the supreme importance of composition in language subjects, on clear and full statement in arithmetic and in mathematics, on full and clear records (with diagrams) of experiments done in science subjects, and on plans showing the successive stages of production in carpentry. Provided that conditions are so arranged that these shall be, *not* reproductions of alien ideas, but the expression of the ideas of the worker ranging themselves in the order required by the work set, there is no surer means of fostering mind growth. It follows naturally that all such modes in which the process of thought expresses itself are most valuable when the expression takes form in immediate con-

nexion with the doing of the work; too often in science subjects the recording in a notebook of work done is postponed until all work is over, and is separated from the work by an interval of hours, even of days. In that case, though not, indeed, worthless, it loses most of its value; for instead of aiding and ensuring accurate thinking, it is a form of reproduction. Expression in one form or another is a natural part of the process of learning and of thinking; without it learning is incomplete, and thought is of necessity vague.

From a teacher's point of view, supposing that the conditions necessary for a high level of learning dealt with above have been fulfilled, there are two points which need very careful watching—namely, accuracy of thought and relevancy of thought. To cultivate these two qualities of mind is the aim of all the practice in thought process which a school curriculum provides. They are ideals at which teaching ought to aim, and they are qualities of slow growth. It is impossible that they should be reached in any full sense in the course of a school education. Even with the trained adult there are large spheres of thought where they have not at all been reached. No one ever attains to them in all directions. It is a great thing if they are reached in some one or perhaps two directions. For the school-teacher, his task may be regarded as successfully accomplished if he has succeeded in making his pupils realize in some one direction what accuracy and relevancy mean; for in so far as he does realize

their meaning, the pupil has gained a standard of good work from which he can judge the quality of his work in any direction. No one can be said to be educated who has not learnt by experience what good work is. Hence the saying of Thring that a school should aim at making each of its pupils 'a jack of all trades and a master of one.' Thus, the two qualities which specially apply to thought process, accuracy and relevancy, are in one sense ideals. Any one school subject—language or science—involves a certain number of ideas of use in dealing with one sphere of environment; these ideas are so interrelated as to form a system of thought; a complete text-book of the subject is an exposition of such a system. Seeing that the ideas composing the system are interrelated, the accuracy and completeness of each of them is dependent upon the accuracy and completeness of the rest. The whole of them attain to their full and complete growth in a learner's mind together, though at any one of the lower stages of learning some may be sharply defined and clear in content, and others very vague or non-existent. All are necessary at one stage or another in dealing with that one sphere. The sense of mastery of the subject comes only when all of them are known both separately and in their relation to each other. The sense of mastery itself is a conscious capacity of using them. The relevancy of each is not complete until experience of its application is also complete; the accuracy of each is not complete until all of them stand out in sharp

contrast to each other. In this sense it is evident that accuracy and relevancy are ideals.

Now, it is manifest that ordinary school curriculum—no matter for the moment how the claims of different subjects to a place in it are determined—deals with parts taken from a number of systems of thought. Arithmetic forms one system, grammar another, history and geography each of them another, and so on. These systems vary much in size and complexity. Some, like arithmetic or geography, with comparatively few ideas illustrated and utilized in a number of directions; some, on the other hand, like history, with a realm of ideas as vast and varied as have been the experience and social phases of the human race. Some, again, like arithmetic, geometry, or grammar, form compact and logical wholes; others, like language, find expression for all the varied forms, infinite almost in number, in which the past thought and emotions of a race have been crystallized. In a sphere so vast and complex a lifetime is insufficient to reach the ideals of accuracy and relevancy; the goal recedes the more the learner advances. In many spheres the utmost that a school curriculum can do is to start the learner upon a journey the goal of which he will not reach however far he travels. In some few spheres of thought the goal lies nearer, and a sense of mastery may well be now within the period of school education.

In another, perhaps lower but more practical, sense accuracy and relevancy are qualities necessary

to any learning which takes place at a high level. When a purpose of any kind, long or short, simple or complex, has been worked out, the thought series by which it has been reached may be represented symbolically as follows :

S—*a*, *b*, *c*, *d*, etc.—P.

S represents the datum, P the end, *a*, *b*, *c*, etc., intermediate steps towards it. When the series is a rational series—*i.e.*, has involved reasoning in its construction—all the intermediate steps may be symbolized by M. In constructing the series, the greatest difficulty is always to get started—*c'est le premier pas qui coûte.* With each step taken the direction in which the next one lies becomes easier ; possibilities of advance are narrowed down. Between each step symbolized in the scheme—*i.e.*, between S and *a*, and *a* and *b*, etc.—the mind has to pass through at least two phases. For example, arrived at *a*, the mind must analyze results obtained so far, or, in other words, concentrate all attention upon the new datum in the hopes of finding *b* by a blending of its own ideas with *a*, or parts of *a*. The direction of the next step *b*, when the next step has been suggested, has to be tested by reference to the whole train. The question is, ' Is it a step towards P ?' If not, it is rejected, and a new concentration on the datum at *b* must take place, and so on until some step be found which is the right step towards S. Very possibly a path which suggests itself has to be followed out for a considerable

distance before it becomes evident to the worker whether or not it is leading to P. Thus, between *a* and *b*, *b* and *c*, etc., must be a twofold working of the mind, the first called analysis, or (by Herbart) absorption; the second, synthesis, or (by Herbart) reflection. The first is the search for the new step towards the desired end, and is not complete till that step is hypothetically found; the second is the uniting of the new step taken with the purpose as a whole (or its rejection if it is seen to be no advance); in any case it paves the way for a new *analysis*. Thus, all the way through analysis and synthesis follow each other till the train is complete.

It will probably already be evident to the reader that the quality specially necessary to thought when engaged in analysis is accuracy, and when engaged in synthesis is relevancy.

The accuracy demanded in analysis is, in the first place, an accuracy of observation; the ideas used to split up the situation in the search for a clue must themselves be to some degree clear and definite—just, that is, sufficiently definite for the purpose demanded—no more is required of them; the observation itself must be accurate, but it need not be a complete analysis of the situation, only such observation as is required to suggest the clue; when the clue is found observation changes, and takes a new direction: the clue itself is followed out. Hence it is plain that only relative accuracy is required—relative to the purpose in hand. The accuracy so far spoken of is an accuracy of thought.

Very probably another kind of accuracy may be equally necessary—viz., accuracy of performance. The purpose in hand may involve reading, or spelling, or writing, or arrangement of apparatus. If these things have been practised already they will not require thought process for their guidance : they will be performed in perceptual process. When a purpose involves the use of any of them some degree of accuracy is necessary, but what degree ? Need, for example, the writing be copperplate ? Need the apparatus be perfect ? Obviously here, again, the amount of accuracy required is such as is necessary for the purpose in hand, or such as may reasonably be demanded of such and such pupils. Different teachers would here draw the line in different places, but all would draw it somewhere. Perhaps the aim in these matters should be rather to prevent and check carelessness than secure accuracy. Let it be remembered that such things as writing, elaborate neatness with red line decoration, elaborate paraphernalia of any kind, are things on which many a pupil, perhaps the majority, would gladly spend their time, if only by that means they may avoid thinking. As soon as a pupil has got beyond the first beginnings of his education all these things belong to the lower level of mind working. It is quite possible to pay too much attention to them, and pedantic demand for accuracy in them may easily become a handicap to real progress.

The relevancy which has been said above to be

so closely connected with synthesis is of extreme importance in the process of learning. Without it there can be no intelligent learning whatever. If each successive step be not firmly united to the purpose in hand the whole train falls to pieces; the mind has no firm hold of its own purpose, no clear comprehension of the stage reached, and without that there is no possibility of reaching the next step. The learner continually needs to be pulled up with the question, 'Why did you do that?' 'Where have you got to?' 'How will it help you?' 'Does it bring you a step nearer to what you want?' There can be no intelligent work if the learner does not know both the direction in which he needs to go, and the direction in which his immediate thought is leading him. If progress be not checked by reference to the purpose in hand, conation towards the end inevitably becomes blind; work sinks below an intelligent level. On the other hand, with each succeeding checking which marks progress, the level of working rises, and conation becomes more enlightened.

CHAPTER IX

GROWTH OF IMMEDIATE VALUES

Final and immediate values contrasted—Nature of immediate values—Difficulty of investigating them. A. Immediate Values in Early Child Life: Some necessary conditions of their growth. B. Immediate Values in the School as a Society: Indirect means of cultivating them—Orderliness—Cleanliness—Tidiness—Punctuality—Discipline: its relation to will, conditions of it, and difficulties in respect to it—Social instincts and the school—Emulation. C. Immediate values in school curriculum—Sense of progress as a stimulus—Good work in some one subject essential as forming a standard—Literature, Art, Music and æsthetic values—The learning and teaching of moral values.

In the preceding chapters an attempt has been made to outline different types of mind process in ascending order, and to treat them in such a way as to bring out the relations which they bear to learning. Throughout only those phases of mental activity have been dealt with in which final values predominate, and, in consequence, only those aspects of education in which direct teaching is concerned, and only those qualities of mind which make for efficiency. If education had no other aim

than this it would be rather a danger than a benefit both to the individual and to society, for it is obvious that a mind endowed with strength of purpose, and equipped with the knowledge necessary to the carrying out of purpose, may exercise its power in a direction detrimental both to itself and to society. The successful criminal has as much need of the efficient mind as the philanthropist or the business man.

We have still to deal with those influences, direct and indirect, which a school brings to bear upon its pupils in its attempt to fulfil its high duty of training character, and to cultivate immediate values. It will soon become apparent that the method which has hitherto been followed will not take us very far in the desired direction. But it will be well to try and follow it as far as it will go; accordingly, we will approach the problems of character training first of all from the point of view of the learner, and see how far the facts concerning learning which have already come to light are available here.

We must first of all return to the distinction between final and immediate values made in a previous chapter. Final values belong to ideas, and to ideas only, and they are strong and weak just in proportion as this or that idea is needed for the performance of some purpose, occurring in environment or devised by the individual. Ideas acquire this value from being used, and it is relative to their use and to nothing else. But immediate values, though very often connected with purposes,

and nearly always with ideas, are not necessarily connected with either; they have their origin in those instincts and emotions which in child life are prior to the growth of ideas, and are among the chief causes of that growth.

Final values are positive only. This or that idea either is needed for the performance of this or that purpose, or it is not. If it is not, then so far as that purpose is concerned it has no value, though it probably possesses value in connexion with some other purpose. If it is needed, then its final value is strong or weak in proportion to the strength or weakness of the purpose. If, for example, an artist, in making a sketch, finds that he has come out without some special colour, and that that colour is indispensable for depicting a desired shade, the value of that particular paint to him will be intense, but on other occasions it may have no final value at all.

Immediate values, on the other hand, may be either positive or negative. They are forces within the individual, propelling him towards some object or repelling him from it, or in some other way determining his attitude towards it. They admit of any degree of strength varying from paroxysm at either extreme of the scale to indifference. We have here to do with the whole emotional life of the individual, from its earliest instinctive manifestations, such as the anger, sorrow, joy, affection, and fear as occurring in early infant life, to its most refined complexity, as illustrated in religious senti-

ment or artistic appreciation. Are there any laws of the growth of immediate values, any aspects of their development, which the teacher ought to know ?

We shall not here attempt a psychological analysis of the different emotions, still less shall we try to trace them through the various stages of complication and elaboration through which they pass between infancy and manhood. Both of these modes of approaching the subject would lead us into a discussion of disputed questions and rival hypotheses. There is as yet no accepted definition of emotion, and no accepted classification ; and a genetic treatment of the subject has hardly as yet reached more than an initial stage. There is, however, something to be learned from the very fact that the psychology of the affective side of mental life should have remained so far almost unexplored. Feeling, as such, is very difficult to investigate by introspection ; as soon as any introspection begins a final value is substituted for an immediate value, and the immediate value begins to subside. It is of the very nature of feeling that it should be unanalysed ; analysis is in a very real sense its solvent. Our feelings and emotions, undoubtedly instinctive at their earliest appearance, never lose their instinctive character ; they are essentially the instinctive response of our nervous system as a whole, or of our mind as a whole (it matters not which way we put it), to some situation as a whole—a situation either arising in environment or ideal.

The emotive train, or, as Sully calls it, the 'somatic resonance' of an emotion, is the best and often the only expression which it can get. Words, as we have already seen, naturally express, not feeling, but ideas; the vocabulary of feeling is quite remarkably scanty and primitive compared to the almost limitless variety both in quality and in strength of the feeling which one single individual may experience even in a short period of time. Yet if we try to analyse feelings, the result of such analysis can only be expressed in words—a medium as unnatural as it is insufficient.

It is, therefore, never wise in the education to attempt to direct a child's attention to his own feelings as such, or to ask him to give a reason for what he feels. Attempts have been made in this direction with a view especially to gathering evidence of the attitude of children towards different subjects in their curriculum. If evidence so obtained could be regarded as reliable, such inquiry might lead to useful conclusions. But the very process by which it is obtained of necessity vitiates it. If a child be asked, 'Do you like learning geography?' he may quite naturally answer, 'Pretty well,' or 'Very much,' or 'Not at all'; but if inquiry be further pressed as to why, the child does not know what to answer; he can no more tell why he likes it than an adult can say why he likes either music or poetry. If he must find some answer, he will fix, probably, either on the answer which comes first, or on an answer which he imagines will win approval, and

the value of whatever answer he does give is more likely to be its amusing character than its reliability. If a child be asked, 'Do you like this or that person?' he probably can find a reason for his like or dislike. He will fix on some instance of the treatment he received from the person in question as his reason. The last salient aspect of So-and-so's conduct towards him colours his attitude for the time being, and his likes and dislikes for people are more definite and developed than for subjects of his curriculum.

It is perhaps fortunate that experiments which aim at direct investigation of immediate values should prove abortive, for they do no good to the children on whom they are practised. Any attention on the part of a child given to feeling is apt to lead to a morbid attitude which is exceedingly unhealthy. A child of from four to six or seven years of age is growing into a consciousness of himself as a person; and, especially if he have few companions of his own age, he is apt to brood over the treatment which he receives, and over his own attitude towards both people and things; his own feelings become of importance to him as experiences in themselves. It is a matter of common knowledge that such brooding is not only harmful, but injurious to health, and calls for a change in surroundings which shall direct attention to outside activities.

There is one other way of dealing with immediate values which must be mentioned. It is possible to distinguish certain types of temperament—the

sensitive, the apathetic, the timorous, the choleric, the placid, the buoyant or hopeful, the melancholic, the artistic, and so on. These we might describe, and treat of their failings and the means of remedying them. There are more obstacles than one to such a mode of treatment. The terms in use to describe temperament are popular, not scientific, and they are not mutually exclusive. It is very rare that a child can be said to belong to any one type ; a child very sensitive in one direction may be quite apathetic in another. The hopeful temperament is very liable to fits of depression. The placid child surprises one at times with outbursts of passion. Almost every child in the course of his growth passes through phases which are characteristic of different types. Changes from one phase to another are very often due to bodily conditions, and if they are serious enough to call for a remedy, they belong to the domain of medicine.

If, then, we can neither investigate immediate values directly, nor deal with them under such separate headings as the term 'temperament' suggests, what mode of procedure remains ? We have, so far, as data only two facts : (1) That feelings and emotions are instinctive in character, and are the response of mind as a whole to a situation as a whole ; (2) that the primitive function of feeling is to rouse conation. The proper expression of feeling is not further feeling, but deeds of some kind. It will be most convenient to treat our subject under

three heads : (A) The growth of immediate values in early childhood ; (B) the influence which the school as a society brings to bear upon them ; (C) the connexion which the subjects of an ordinary curriculum have with them. The subject is so wide and so difficult that no more than an outline treatment is attempted under any of these headings.

A. IMMEDIATE VALUES IN CHILD LIFE.

It is impossible to say whether the impulsive acts of young children ought to be regarded as separate impulses and instinctive, or whether they are reducible to a few main instincts. As the former view is that of recent writers, we shall adopt it, and in that case childish instincts may be said to be almost as countless as a child's impulsive actions.

There is an impulse to taste, to suck, to clutch, to creep, each as natural to the child as crying or smiling ; action and emotion are in the earliest years equally instinctive. Reverting to terms used earlier, it is not possible to say which of these are adaptations and which are adjustments. There are two classes of influences at work from a very early stage, moulding and altering the immediate values which prompt all these different forms of conation. The one is the child's own intellectual growth, the other the furtherance or checks which the child encounters from environment—*i.e.*, both from people and from

things. Of both of these something must be said, for both are important.

The intellectual growth to which we refer is the advance from perceptual to ideational process already described in Chapters V. and VI. This first growth of ideas, in which, as already explained, language plays so great a part, takes place exactly in connexion with the early forms of conation enumerated above—all of them, that is, begin in perceptual trains, and round all of them first meanings merely, and then ideas, gather. With these new mental products, of course, the previous immediate values blend. We have already seen that when once ideas have grown round a perceptual train, not only has the train itself greater chance of being called into play, because it can be centrally initiated, but it can break up into sections, each of which may become a component part of other trains, partly old and partly new. All this will be clear from what has already been said on the subject. But the important point here is that connected with immediate values. Every train has an immediate value of some kind, high or low, in one way or other of the three scales of feeling—the pleasure-pain scale, the tension-relief scale, and the excitement-depression scale. As the train varies, the value varies also. Thus, the rise from a perceptual to an ideational level brings with it a new world of immediate values.

Not only is that the case, but, simultaneous with the gradual extension and addition to immediate

values, what was instinct before grows into emotion proper. The growth of ideas enables mind to be both prospective and retrospective.

Before performing an act, given ideas connected with it, it is possible to form a mental picture fairly clearly anticipating events ; after having performed an act, it is possible to recall a fairly clear mental picture of the act done and its consequence. Consider for a moment what a difference this upward step makes to emotional life. At a perceptual level both the future and the past are blurred ; the present only is clear. Fear can at this stage be no more than a shrinking from a present situation, and beyond that, perhaps, a vague uneasiness, the child knows not why. But when the child has acquired ideas, this shrinking is enhanced by a mental picture, vague in some parts and clear in others, of the danger that is coming, and turns into a definite fear attached to an ideal object. Shyness, which at a perceptual level is indistinguishable from fear, becomes an emotion distinct in itself. Hope, which at a perceptual level can hardly be more than expectant attention to the present—the attitude of the goldfish on the watch for its food—becomes anticipated pleasure, accompanied by an ideal image of what is to bring the pleasure. Anger at the lower level is a violent protest of the animal at a present situation ; at the higher, it may be a protest either at the present, the past, or the future. Neither regret nor remorse are poss ible at the lower level ; their place is at most taken by vague want or discomfort.

Both become possible in the higher ; and remorse is distinct from regret because the former can only be attached to the memory of our own acts. It would be similarly possible to run through the whole scale of the emotions, and show how much each owes to the intellectual growth of mind.

The development thus sketched takes much longer with some children than with others. There is nothing to gain, and much to lose, by hurrying it or attempting artificially to stimulate its progress. Opportunity for spontaneous activity in a healthy home environment is all that is needed for it. A curtailment of spontaneity involves a dwarfing of values ; and, as we have noted already in another connexion, the herding of little ones together in large numbers inevitably inhibits spontaneous and natural growth. Any student of education is bound to insist on the extreme importance to character of this early period of growth. Emotional endowment springs from early impulses, which are tender shoots, easy to injure and impossible to replace.

When early values have once reached an ideational plane, opportunities for widening their range are countless. Language and sympathy add a new field for their play in the social circle. The world of story in which children naturally and healthily delight offers an inexhaustible practice for them, and beyond it stretches the endless realm of books. It is needless to elaborate this theme, but let us remember that a child's immediate values, whether in the actual world or in the world of imagination,

are nearly always at school, and the school may be either a good or a bad one.

These latter considerations have led us already into the second topic noted above—namely, those external influences which mould immediate values. The first striking fact here is that the instincts and emotions of the child of to-day are, so far as evidence goes, little changed from what those of our ancestors were centuries ago. Each instinct and emotion has a history behind it, as old at least as the race, and probably far older.

One day biology may be able to account for the existence and form of each, and point out the special service which it has rendered. If the young child of to-day could express his feelings, there must be countless times in his early years when he would protest that his instincts are singularly ill-adapted to the world in which he has to live. It is not only that his enterprise often brings unexpected punishment in the form of natural consequences, but he finds himself impelled to a host of things which bring swift condemnation from his elders, and forced by them to do and undergo things which are as unpleasant as they appear to be unnecessary. Is it surprising if he at times breaks out into a violent protest ? To a certain extent, this is sure to be the experience of all children, and if their impulses are strong they have to weather many storms. The child of the rich is usually worse off in this respect than the child of the poor, and the town child than the country child : the former because rich homes

often abound in objects which tempt the child into forbidden enterprise, and at the same time demand of him unnaturally decorous behaviour and neatness; and the latter because a town environment is at once more complex and more restricted than a country one. Thus, it is inevitable that the child again and again finds himself opposed to what is expected of him; and his instinct of opposition (if instinct it can be called), which plays so large a part in the growth of self-consciousness and is the primitive form of self-assertion, is in no danger whatsoever of lacking scope.

Sympathy and imitation—for it is impossible to separate the two in their early beginnings, however widely divergent they may later become—are between them responsible for what is probably the strongest influence moulding the immediate values of young children. At the lower perceptual stage this influence is not the less strong because it is unconsciously felt; when it rises to an ideational level, it lies at the root of all the tender feelings, and is a postulate without which ideals of conduct and character would be impossible. It has many derivatives in later years of childhood and youth, and two are of great importance—the desire of approval and the sense of fairness.

The task of tracing in detail through their different stages the gradual growth of these instincts is one quite too heavy to be undertaken here, and behind it is the still more difficult question, Are the terms used—'opposition,' 'sympathy,' and 'imitation'

—really names for instincts, or are they rather general terms under which the whole host of instincts are grouped ? This is a question for psychologists.

Inadequate and scanty as our treatment of the springs of immediate value has been, enough has already been said to make it abundantly clear that all of them reach out towards and presuppose a social environment. The first and most important environment is the home. Upon the nature of the home and home treatment the childish attitude towards life, his chance of developing his range of instincts into immediate values, depends. The home ought to provide an environment with sufficient restrictions to shield the child from what is dangerous to his health, physical and mental, and leave him ample freedom for the natural play of such activities as his instincts prompt him to. Its regular routine should provide a perceptual framework for the growth of his early habits. Parental influence will rather draw than push him along the desired path. At times he will, of course, run atilt against the barriers set up ; his wilfulness will come into conflict with the will of his elders, and he must then learn the first of all the hard lessons of childhood—to obey. Some of his impulses will have to be checked by punishment, and many others stimulated by approval. But his immediate values need no exciting treats to stimulate them, and no heroic or Spartan discipline to repress them. All unconsciously, for the most part, sympathy and imitation do their work, and he falls into the way of

his home and absorbs its attitude towards life. There is a trustfulness and open frankness in home intercourse which cannot exist elsewhere. The very word 'home' implies it. Childhood is proverbially frank, and in the home atmosphere, which is not overshadowed by fear, a child's immediate values open out as a flower in the sunlight.

The one result of these expanding values is an almost limitless capacity for belief, and love for 'make-believe,' together with the keenest intuitive judgments of the conduct and character of others. We noted in the previous chapter that the normal child passes into a phase in which his whole view of things is animistic. It is scarcely surprising that this period should coincide with his growing consciousness of his own personality, and that the result should be a marvellous activity of imagination.

The above treatment of the growth of immediate values in the years which precede the school age will seem to many students of child study singularly jejune and inadequate, and in some respects it undoubtedly is so, for the mental growth of those early years defies analysis and transcends explanation. It would be alien to the attitude adopted in these chapters if we were to enter into a discussion of any of those wide generalizations by which some thinkers have sought to explain it or sit in judgment upon the hosts of ingenious ways that have been devised for turning childish instincts into a series of pegs on which to hang useful information. Useful

to whom ? To the child or to the boy that is to be ? The question is important. If the latter, can it not wait ? Much has been written on the training of the senses, and many exercises have been devised for the purpose—excellent if the child be abnormally backward in any one direction, excellent, too, if his environment has been such as to deprive him of an opportunity to do the training for himself, but surely but a poor substitute for the child's own spontaneous work. Think for a moment of training of the ear in musical sound, and of the sense of rhythmical movement. Does it not begin with the regular rock of the cradle, and the lullaby with which a mother lulls her child to sleep ? Is it not continued in such games as ' a ring of roses,' when singing and movement go together; in the march round the nursery to the beat of a toy drum or the blast of a toy trumpet; in games with the skipping-rope; in nursery nonsense rhymes; in the snatches of songs, both sacred and profane ? If, again, we turn to colour, does not the child, if he be not colour blind, learn of himself to distinguish any and every colour which he needs ? He can tell a clean from a dirty pinafore, a pink from a blue sash, light hair from dark hair, blue eyes from brown eyes. Does he not of himself learn the colour of daisies as he weaves them into a daisy chain, or of beads when he makes them into a bracelet ? If, when he draws what he calls a horse, he prefers to give it a yellow coat with green spots, we have no right to object. It must needs be remarkable,

for it is going to fight against the dragon with a fiery tongue and blue tail. There is surely no reason why we should clip imagination's wings, and bring it down to earth. It will be the stronger for its wayward flight, and we shall need all its strength later.

B. IMMEDIATE VALUES IN THE SCHOOL AS A SOCIETY.

It is not possible on any theoretical ground to lay down a definite age when school training proper should begin. The rate of development in the ante-school period varies considerably with different children, and is conditioned as much by their environment as by their natural endowment. The town-bred child develops more quickly, as a rule, than a country-bred child, and the child with brothers and sisters more quickly than an only child. Readiness for school is shown by various signs easily recognizable by the parents. Activity reaches out to fields outside the home environment, and the restraints of home become irksome; or perhaps, as is often the case with only children or sensitive children, brooding leads to a morbid tendency which calls for the wider activities and companionships of school; or, again, the child shows an interest and eagerness to know things which are best taught in a class and in orderly sequence, demanding the systematic arrangement which the home cannot supply. Even though none of these

signs are present, and the child is apparently quite content with home life, his nature may be merely marking time, and need the stimulus of school for further growth.

In any case, if he is not sent to school too early, the child looks forward to school life as a distinct step forward in his life, perhaps as the first step towards growing up, always so attractive a prospect to children. To go to school means to a child new responsibilities, new dignity, and new privileges.

Shakespeare's picture of 'the whining schoolboy, with his satchel and shining morning face, creeping like a snail unwillingly to school,' is no true picture of his attitude. He looks forward to the new world which he is to enter, tremulously, perhaps, but with eagerness and high anticipation. At last he is on the upward road, and he knows roughly what is before him. He expects order, discipline, and work, and he knows quite well the difference between work and play. Above all, he expects to make a progress definite and recognizable to himself in definite things—such, for example, as reading, writing, and sums. He may not know what a 'sum' is, but he wants to do them all the same. They may be unpleasant things in themselves, but to him they are an essential part of his new dignity.

This attitude of boys or girls towards school life, which ought to be the natural product of home, and is so in many cases, is one of the greatest assets which a school can have. It is hardly possible to get it when little ones are sent as mere infants to

school, and it is soon dissipated if the first experiences of school life call for no more effort than home life already demanded. Like all feelings, this expectancy has to the child a content which he cannot analyse, yet he demands that his school shall bring his vague hopes to fruition. He is ready to take as partial fruition all those qualities which, apart from instruction proper, are essential to a good school.

First and foremost of these qualities come orderliness and systematic arrangement. These are usually regarded as necessities, without which instruction is impeded or even impossible. Both have, however, for children a positive value, not for anything beyond them, but in themselves. Children expect that each day shall have its own orderly appointed course—that hats, coats, and boots shall have their proper place; that assembly and dismissal shall take place in a known and regular fashion; that lesson shall succeed lesson and subject subject according to a fixed plan. They resent interference or change in the established order of things. Anything haphazard, any element of laxity, is inconsistent with their idea of what school ought to be. They are ready enough to take advantage of laxity, but they despise it none the less, for it lowers their school in their estimation.

Who cares to row in a boat if everybody is rowing in different time? Who cares to play a game with comrades who will not abide by the rules? School is a kind of game for children. They quickly find

out its rules, and do not like them either to be altered or relaxed.

Cleanliness and tidiness are almost corollaries of order. They apply both to the school as a building, and to its scholars as individuals. It is not enough that the building should be periodically cleansed and tidied; the scholars themselves should be made responsible for doing their part to keep it so. Beyond such rules as forbid the littering of corridors with paper, etc., which are a matter of course, it adds to the hold which a school has of a child if his class has a separate home in the building, and is definitely responsible for its neatness. Few schools, perhaps, can have buildings which themselves insensibly inspire respect, but it is possible in all buildings to avoid things which inevitably tend to breed carelessness, if not contempt. In numberless small things involving little or no expense, insignificant, perhaps, taken singly, but very important as a whole, members of a class can be made to feel that they are doing their share in making the school worthy of them and of its work. An immediate value—viz., in this case pride in a school, and in being a member of it—can neither last nor increase unless it find some vent for itself in action. These small things are of great importance just because they supply a value with the expression which it needs.

The same remarks apply with even greater force to personal cleanliness and neatness. Both of these—at least, in the society in which we live—are con-

ditions of self-respect, and are at the same time means of inculcating it. It is quite true that very often neither cleanliness nor neatness are natural to children, and to boys they are more unnatural than to girls. But that is not here the point. All boys and girls respect themselves more and comport themselves better when they are clean and tidy than when they are dirty and untidy. Their lapses in these matters are due to carelessness and not to preference. They may be glad for the moment to escape censure for their carelessness, but they never respect a teacher the more because he habitually overlooks it.

Punctuality is a necessity in any well-ordered society ; children do not need to have this explained to them—they know it, and they expect the school to help them towards it. Their readiness and ingenuity in fabricating excuses proves this. They would not try to excuse themselves if they did not feel that they had fallen below their own standard of conduct. In all these matters it is a child's nature —or, rather, a part of our common human nature— to seek for some justification or other for faults of which he is conscious. This does not mean that the child believes in the excuse himself ; quite as often as not he sees through it perfectly well, and expects his teachers to see through it also. But if he gets the chance he will nearly always try it. Is it not natural when our conduct appears in a questionable light to ourselves to seek the more eagerly to present it in a fair light to other people ?

And in that case is it not a mistake to give children the opportunity to make excuses ? Much depends here on how these minor breaches of discipline are treated. It is as great a mistake to magnify them into crimes demanding punishment as it is to neglect them altogether. It is enough that the offender should know, and that his class should know, that the offence is known and noted. Thence, I think, set punishments and automatic rules in connexion with them are in all these matters a mistake. The set punishment involves either an injustice or an inquiry into the nature of an excuse, and both are usually almost equally undesirable in the case of young children. It is enough to say, ' You are late ; go to your place,' and let the tone mark the grade of disapproval. Rewards are just as much out of place as punishments. A child neither needs nor expects reward for the performance of his obvious duties ; it does not conduce to his own self-respect to let him think that he needs to be bribed either by marks or by prizes into reasonable conduct. The only recognition he needs to stimulate his efforts is a very occasional word of approval if his progress is marked, and he values this more than either prize or marks.

Every school professes at least to demand punctuality from its pupils, but it is not always sufficiently recognized that there is another side to the matter. It is equally true, and perhaps, for a teacher, even more important, that pupils demand punctuality from their school. They resent any-

thing slipshod and haphazard, in an instinctive fashion of their own, as derogatory. It offends them that a lesson should begin five minutes late or extend beyond the prescribed time, that work due at a certain time should not be collected, or due back to them marked should not be forthcoming. They dislike, too, that hurry and scurry in the course of a lesson which comes from faulty preparation, or from an attempt to cram too much into one period, which is in reality only another form of unpunctuality. These are things which even quite young children are quick to see and quick to judge. They belong to that sphere of personal treatment in which the childish power of judgment develops far sooner than in any other sphere. Though little space is devoted to this topic, any teacher of experience will be able to see how extremely wide its application is.

To these simple desiderata, which form, as it were, an outer framework within which immediate values grow to maturity, I should like to add another. It is hardly too much to say that what neatness and tidiness are to the body distinctness of speech is to the mind. In earlier times, when books were a rarity, there was little danger of its being neglected, but nowadays it very seldom receives anything approaching to adequate attention, nor is its extreme importance at all generally recognized. Yet on purely utilitarian grounds its importance is obvious ; half the difficulties of spelling at once disappear if a child pronounces words dis-

tinctly, and it is a manifest disadvantage throughout life to have a mumbling and indistinct utterance. When, in addition to these practical considerations, teachers understand that distinct speech is at the very least a stimulus to correct thought, and perhaps even a condition of it, they will set themselves to remedy what is the most glaring defect in modern education.

Discipline may be defined as conscious and willing submission to a will recognized as stronger and better than one's own. This definition, which we here postulate, and cannot pause to discuss or justify, applies to all true discipline of any kind. Consisting as discipline does in a relationship between two wills, the plummet of psychology cannot fathom it. The will which submits does not thereby cease to be a will (otherwise the definition might include cases of hypnotism). It continues to be a moral agent, but is consciously guided and stimulated. School discipline, as distinct from discipline in general, limits the submission to those purposes which the school life includes. Those simple qualities of a good school—orderliness, cleanliness, tidiness, and punctuality—on which we have already had a word to say, are not in themselves a part of discipline, but rather provide an atmosphere conducive to it. They may exist without it, and it can, and, unfortunately, perhaps does, exist without them, though in an imperfect form. Care and efficient organization may suffice to secure the simpler virtues of a school, but they can never of

themselves secure discipline, which depends, not on them, but on the personality of the teacher—a personality which must not only control, but also stimulate and inspire. It is in discipline that the ideals of the scholars, the teachers, and the school itself meet. To learn to value it is the highest lesson the pupil has to learn, and, once learnt, its influence lasts a lifetime. To exercise it is the continual aim of all true teachers, and in proportion as they exercise it aright, they become masters of their craft. To foster it and conserve it is the highest duty of the school as a whole, for without it no school can be a school for character-building.

Though it is not possible to analyse wherein discipline consists, it may be useful to note a few of its conditions, and of the mistakes which are liable to mar it. As a relationship between two wills, any real discipline presupposes that teacher and pupil are brought into such connexion that they can know and understand each other. There must be trust on both sides. The teacher must trust the pupil in such a way as to let the pupil understand that much is expected of him, and that the teacher believes him capable of a high standard of conduct. On the other hand, the pupil must trust the teacher to the extent of accepting his judgment and direction unhesitatingly as right and just. Confidence on the teacher's part in the honest endeavour and capacity of his pupil, and on the pupil's part in the justice and uprightness of his teacher, are the very

essence of discipline. Hence it is hardly surprising that more than half the difficulties that occur in the discipline of a class are due to mistrust either by pupil or teacher, or both. We have often already insisted that a child's feelings towards persons develop earlier than any other of his values, and in case of any unfair treatment, to himself or to his fellows, or when any slur of suspicion is cast upon his feeling of honour, a child's resentment is keen ; the bond on which discipline depends is broken. Nor is it so easy to reform it as it is to create it in the first instance ; hence impartiality is a *sine qua non* in the teacher, and favouritism is the most disastrous of faults. It is far wiser to err on the side of taking a boy's word, even though appearances point to his lying, than risk the possibility of an unfair charge. Let a teacher be doubly sure of his ground before he lets a pupil think that he doubts a pupil's word. If he should, unfortunately, make such a mistake, let him not hesitate to apologize, for apology is the pupil's due.

At the back of the pupil's mind, in his relation to his teacher and to the authority of the school in general, there lies an element of fear, not felt, as a rule, as unpleasant, but sufficient to tinge his attitude with awe. Fear of the kind described is a salutary check on impulse, and an aid to self-respect and a feeling of responsibility. When he has committed an offence against a school rule, this feeling strengthens into one of dread, all the stronger if the consequences of the offence are vague to the

pupil. Such dread constitutes in itself a punishment for offence, and the prospect of it is usually sufficient deterrent. It is well that neither the assistant nor the head teacher should show his hand in the matter of penalties. The more seldom a penalty is inflicted, the more potent is its effect. Hence it is extremely unwise to threaten punishment or talk about it beforehand. When once it has been decided that a particular offence deserves a particular punishment, it is far better to inflict it at once than to let it hang over its victim. Quite apart from any question of the cruelty of punishment deferred, during the whole time which intervenes between the discovery of an offence and the infliction of punishment, the pupil is liable to be too much depressed by fear to be capable of any useful work whatever. A head master once said that the great secret of discipline was never to give an ultimatum ; and in the sense explained above the saying is a true one. It is thus the duty of the head teacher to have a means of knowing and checking all punishment of whatever kind inflicted in his school. If at any time the tale reaches an unusually high total, there is a case for inquiry. The punishment list is a barometer of school discipline : the higher it rises above normal point, the worse for the discipline ; but there is also a point below which the list will not normally sink. Among normal children, working at any pressure at all, there is always some percentage of shortcoming, idleness, carelessness, etc., which calls for punishment. A

complete absence of punishment may be, indeed, a sign of unusual and temporary excellence, but it may be, and often is, a sign of slackness.

We have already alluded in the previous chapter to the danger of allowing fear to play a prominent part in discipline, and it is needless to repeat here what has already been said. Many a teacher has, in dealing with a class, a manner far more awe-inspiring to his pupils than he imagines, and just in proportion as fear rises the level of the work done must inevitably sink.

We have already insensibly passed, in speaking of discipline, from the relation of a teacher to a pupil to the relation of a teacher to a class. A class is something more and different from a number of individual pupils, just as a school is something more than a mere assembly of scholars. It is found as a matter of experience that the larger a class is up to twenty (provided that it is fairly homogeneous) the easier it is to discipline and to teach, and that just in proportion as numbers rise above thirty efficiency decreases. Similarly, in a school up to between 200 and 300 every increase in numbers lightens the task of organization, and adds possibility for the development of corporate life, but beyond a certain number (say 500) both organization and corporate life tend to become unmanageable.*

* Schools larger than this which have a staff many members of which are of a calibre which fits them to be head masters, and which fall into houses each constituting a separate society, are, perhaps, not subject to the remarks made above—on that point authorities differ.

There are in most cases considerations of finance and of staffing and classification which afford explanation for these facts, but we are not at all concerned with any of these. Quite apart from them, the facts themselves suggest a topic which does not concern us. The earliest social sphere of the child is the home. When the child reaches an adult age he goes out into the wide social sphere of work. Between them comes the school, a society whose unit is in the class. As a society the school, which includes all teachers and pupils, needs a spirit of loyalty within it, a readiness on the part of the individual to make sacrifice in its service, and place its welfare before his own satisfaction. Such spirit is not built up in a day : it requires time for its growth. A boy must needs be a member of a society for a long time (usually more than a year) before its influence upon him makes itself consciously felt. Such a spirit of loyalty begins with the staff, and spreads from teachers to older pupils, and so downwards through the school. A selfish spirit on the part of the teacher—that calculating nature which grudges each extra service—makes it impossible. There is hardly any side of a school's activity—class work, games, societies, or interests—which may not become at once a means of expressing loyalty to the school as an institution, and of fostering a true social spirit in individual scholars.

We have spoken of the relation between teacher and pupil, but have said nothing as yet of that never-ceasing influence which, consciously or un-

consciously, one pupil exercises on another. Here there is an endless sphere for the growth and exercise of immediate values, but beyond noting it, it is hardly necessary to say much about it ; for, given proper discipline and the spirit of loyalty, it is wise to leave it a wide freedom for its action. Any overt attempt to supervise it endangers that spontaneity of intercourse which is so important as to be well worth the risk of occasional excrescences. As he rubs shoulders with his fellows, every boy will have his battles to fight and his small hardships to endure. He will make his mistakes and have to suffer for them, and all this is a valuable part of his training. The main thing of importance is that the general tone should be a wholesome one, and this depends, in the main, on the nature of discipline.

The instincts and values which find satisfaction and scope in the developed corporate life of the secondary school are obscure in origin, and they are certainly among the latest to develop, and are, iu all probability, closely connected with the appearance of the last great instinct to occur—that of sex. If the physical changes connected with this instinct are complicated and obscure, the mental changes are even more so. One thing alone is certain, that they are far-reaching and profound, and that boy and girl pass through a stage critical to health of both body and mind. They find themselves exposed to forces within them which they can neither control nor at all understand. In the presence of these forces, which appear sometimes gradually

and, apparently, sometimes suddenly, a reconstruction of most of their immediate values has to take place somehow. They are often subject first to one extreme and then another of elation and depression, of feverish activity and slackness, of indiscretion and morbid reserve. Their attitude towards life and people may be as strange and incomprehensible to themselves as to others. Until this period has well set in, it is unsafe to predict what a boy's bent and taste is likely to be. It is a matter of common experience that an apparently strong instinct of childhood—*e.g.*, interest in animals or plants—may completely disappear at about the age of fourteen ; or that an apparently very clever boy may suddenly become dull at the same age. All this is a strong argument against early specialization. During this period the only guide for a teacher or parent is experience, and probably the best course is watchfulness and unobtrusive sympathy. It is not well to pay much attention to changing moods and waywardness, nor to attach much importance to occasional outbursts of naughtiness, or even defiance of authority, which are prone to occur. There is in many boys at this age an element of the hooligan. The healthiest environment is one which finds scope for much open-air activity, and combines many outlets for active interests in company with others with a simple, wholesome regimen of life.

There are probably more difficult problems connected with discipline and with immediate values

between the age of fourteen and sixteen than with all the rest of a pupil's school career. To treat of them in detail is altogether beyond the scope of this chapter. So long as a boy or girl is definitely under the control of a wholesome social environment, whether it be that of the school or of the home, there is little real danger; the danger-points are emphatically the gaps—long and short—which are controlled by no outside influence and filled by no definite purpose—*e.g.*, the going to and from school at a day-school and the midday interval.

Just before this period begins, or else at its beginning, the primary school sends the majority of its pupils out into the world to fend for themselves. If they at once get into some definite work which takes up their attention and keeps them fully occupied, its very newness and the call which it makes on their adaptability is a protection, even though the work be wearisome and the hours long. It is far better than idleness. If, on the other hand, they are tossed to and fro from one odd job to another, with intervals of idleness between them spent in the street, their chances are small. Deprived of all rational and consistent social support to their character at its weakest point, its most critical stage, it is hardly to be wondered at if young lives suffer shipwreck, and all sorts of immorality and crime finds recruits.

There remain two matters which must be mentioned, though neither can here be dealt with otherwise than summarily—school games and the

instinct of emulation. We may, perhaps, be permitted to couple them together, for the latter finds its most natural expression in the former. Emulation is probably one derivative of the instinct of 'opposition' mentioned already. The values attaching to its manifestations are probably stronger in children of the Anglo-Saxon race than in any other, just as the instinct itself is stronger. Perhaps that is the reason why the uses to which it is put are far more manifold and prominent in an English school than (*e.g.*) in either a French or a German one.* A critic of another race observing our customs might conclude that without the stimulus of emulation it was impossible to get good work out of the Anglo-Saxon boy and girl; and one eminent psychologist has gone so far as to hold that emulation is an indispensable condition of the best work of any kind. It is needless to say he is an Englishman. Two opposite lines of argument are evidently possible in this connexion.

* School games do not need to be advocated or justified to English readers; their importance in training is nowhere so well understood. The instinct of emulation, as manifested in them, has a peculiar interest, because final and immediate values are so blended that it is impossible to say which is strongest. But this instinct is by no means the only one which finds scope in games; there are at least two others—the delight in free exercise of the muscles in the open air (*i.e.*, the value of exercise for its own sake), and the delight in corporate action (*i.e.*, the instinct of the 'team' or 'gang'). Many other elements—*e.g.*, the pleasures of skill, opportunities for courage and self-denial—combine to make games a delight, sometimes, indeed, an absorbing passion in our schools.

If emulation is so strong a force with our children, it is surely foolish not to harness it to the purposes of the school, and use its stimulus whenever we can. It may be true that in a competition only one can win, but it is a good lesson to the others to learn to take a beating without being discouraged, and so on. The line of argument is familiar. It is equally possible to argue thus : If this instinct is unusually powerful in children of our race, is it right in the school to find such a scope for its play, to lend to it the sanction of authority, and to give it a place both in school and out of school so prominent as to enhance its strength indefinitely ? Do we not run the risk of turning out characters not harmonious and evenly balanced, but abnormally developed in one particular direction ? Is it fair so to tie a boy's best efforts to a particular type of stimulus as to make them difficult, if not impossible, without it ? There are other values connected not only with the subjects of ordinary curriculum, but with good work for its own sake, that run a risk of being obscured or even quite eclipsed. Again, the argument is familiar, though perhaps not so familiar as the former. Both lines of thought will find many adherents, and whatever line be taken, the answer to a number of current problems in school organization depends upon it. We have stated some of these below, and leave the reader to supply his own answer.*

* The place and prominence of school games and inter-school matches ; the practice of place-taking in class ; the uses of marks

All through this section we have been dealing with the means through which the strong social forces of a school mould immediate values—example, stimulus, and control on the part of the teachers, imitation on the part of the scholars, and, in all probability stronger and more far-reaching than either of these, the conscious and unconscious influence of the school as a whole on the scholars as individuals, and of individual scholars upon each other. Indirect teaching through performance is continuous; of direct teaching through precept there is probably very little. The aim is to form such an atmosphere of healthy activity that vicious impulses shall be starved out. Wrong-doing and wrong-speaking are instinctively felt to be unworthy. If faults occur, it is never from ignorance. The culprit knows he has done wrong; the teacher has to help him to set it right. If the teacher expresses indignation, it is in order to intensify a feeling already existing in the pupil that the wrong is a disgrace. There are occasions when a head teacher has to make the whole school feel that an offence has occurred so serious as to disgrace the school as well as the culprit. Then it is wise to strike while the iron is hot. The rarer such appeals are, the stronger is the impression they make.

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with weekly class-orders and school prizes; competitive examinations for scholarships at school and university; the practice of estimating a school's reputation by the university scholarships won by its pupils; the effects of all the above on the average boy.

Obviously, the school may have occasionally one among its pupils so disloyal to its aims, with an influence so malign, that vicious impulses of others find a congenial atmosphere in his company. Such pupils are traitors in the school society, and must be treated as such. As a last resort, the school must have the power of expelling them. They are as noxious as an infectious disease. No society whatever can afford to make light of treachery.

C. IMMEDIATE VALUES IN THE SCHOOL CURRICULUM.

For the most part this is a topic with which the methodology of each subject has to deal. Only certain general aspects concern us here.

A teacher's personal manner, which is only partially within his own control, is, of course, here, as elsewhere, of primary importance; but, beyond mentioning the fact, it is not necessary to say much about it. If a teacher is gifted with a stimulating personality he soon becomes aware of the fact, and is only too much inclined to rely on it alone. If, on the other hand, this personal gift is denied him, he can, at any rate, do his best to make his interest in the subject he is teaching evident, and he can avoid making his class suffer for his own changing moods. A genuine value of the subject in hand, however elementary—as something for the moment the one important thing—aids more than cunningly devised attempts to appeal to a class. In all such

attempts there is a danger of playing down to the level of a class. Pupils soon see through them, and their attractiveness is short-lived. Apart from the influence of the teacher's manner in determining the attitude of pupils towards any subject, the most important fact for immediate values, true for all subjects alike, is the stimulating power of a sense of progress. *Ceteris paribus*, in any subject that method of treatment is best which enables a pupil to gauge his own progress by performance. One or two illustrations may make the meaning here plainer. In teaching arithmetic, it is possible according to one method to confine a pupil's attention for long to dealing with the simple numbers—say 1 to 50—in various combinations, so as to teach him, separately, first addition, then subtraction, then division, then multiplication, confining his attention to each subject separately until he has some facility in it. Contrast with this a method which takes a smaller number—say 1 to 20—and takes all the simple processes with them concurrently, and illustrates them further by instances dealing with quite low figures in money. In the former case considerable patience is needed from the pupil, whose store of patience is small, before any sense of progress can come to him. In the latter, what little arithmetic the child knows constantly serves to interpret for him concrete cases which he meets in experience, for arithmetic is first needed in a child's life in dealing with money. It is obvious that the latter method

is the more likely to engender a liking for arithmetic.

Take one example from a stage rather more advanced. In Latin, when a boy has fairly mastered the main outlines of regular accidence and simplest syntax, it is a mistake to plunge him into Cæsar. His progress is so slow, and the difficulties so numerous, that he seems to himself to be standing still. Disgust of the subject not seldom results. Or, again, in the learning of modern language, the greater interest in the subject which the conversational method undoubtedly breeds is in no small degree due to the fact that each step forward in increase of vocabulary or in use of ordinary phrase is naturally brought home to the pupil as an advance towards mastery. If a boy, for example, can actually correspond with a French schoolboy, in however simple a fashion, he feels an increase in scope and power. When he can express aloud and continuously ideas, however elementary, connected with picture or incident, the language which he is learning begins for him to fulfil its function as a language.

With the same end in view—namely, to help a sense of progress—it is, perhaps, worth while to mention a plan which experience has often proved useful. Let in any subject normal specimens of a pupil's work be preserved and given back to him at a later stage—a month, six weeks, a term later—and let him compare what he now can do with what he did then, and sometimes

let him actually do over again the old piece of work. Conversely, it is not wise to keep specimens of a pupil's worst failure as a reproach to him; the old plan of tearing up on the spot has its merits. Yet it should be noted that this sense of progress does not come to any pupil except through his own personal efforts.

A thing learnt on the lower planes of learning may be known in a sense, but the knowledge is of a lifeless type, and brings with it no thrill of stimulus.

In the actual teaching of nearly every school subject which forms a logical whole or a compact system of thought—*e.g.*, arithmetic, geography, Latin, grammar—there are at least two distinct stages: (1) The earlier stage, long or short, in which the order for teaching is not the logical order, but is determined partly by this principle of progress realized step by step, and partly by those considerations connected with final values sketched in Chapters VII. and VIII. (2) The latter stage involves a revision which will gather up data already learnt and range it into the logical order of a system. Until this latter stage has been reached the sense of mastery in a true sense can hardly be said to begin.

I doubt whether any pupil who has not reached a mastery in some one subject can be said to have had a real chance of appreciating the pleasures of intellectual work.

The learner in school may be compared to a

climber among drifting mists making for a summit hidden from him. He knows by the upward path that he is rising higher and higher : that is his sense of progress. He gets partial views as he climbs, but not clear enough to show him how the land lies, or how far the summit is away. He reaches one, it may be, of the lower summits, and the mists lift gradually. He can see the path by which he has come ; he sees the relation of the peak he has climbed to the rest of the mountain, even though he cannot see the other summits ; but the view he gets is his reward for climbing, and makes the effort worth while. It is not possible before he starts to tell whether he has it in him to appreciate the view when he sees it. He may not care for natural scenery at all, and it may be no stimulus to him to lead him to climb again. On the other hand, it may be an experience the grandeur of which he is not likely to forget.

In the same way it is not possible to predict whether the learner can appreciate the pleasures of intellect or gauge the extent to which mastery of one system of thought will serve to whet his appetite for further learning. At any rate, it is the business of education to give him his chance, and see that it is a fair chance. It is unreasonable to expect every learner ever to care for knowledge as such. The simile used may help to explain why a teacher must expect in many cases to be disappointed at the results he gets. Not every pupil has it in him to make a student. It may explain, too,

why a taste for intellectual work often does not show itself till the very end of school life, and sometimes not till after the school age is past. In that case we ought to be very cautious in judging of results. The real value of the work done by a boy cannot be estimated by its apparent value to him at the time.

A great deal of learning done in the earlier period of the school life starts in perceptual process devised in the school, and is all the way through accompanied and supported by some form of practical work. Some subjects naturally involve a great deal of such work—*e.g.*, drawing, manual instruction, needlework, elementary science. Others —*e.g.*, elementary mathematics, geography, and even history—are found to gain enormously in interest when the course is so adapted to lend itself to the introduction of practical work in which perceptual trains are involved. The reason for this observed and established fact is not far to seek. Perceptual trains are mind's early means of all learning, and to any normal child they have, as such, a strong immediate value of their own. A boy likes to have hands and eyes at work, but, in addition to this, the progress made in deftness and manipulation, the result as an experiment finished, is obvious and palpable to the learner, and brings with it its own stimulus just in so far as it is successful.

We have now to turn our attention to a group of subjects with which immediate values of an æsthetic

nature are definitely connected. Art, music, and literature are all of them in their origin modes of expressing feeling. Each has a technique connected with it which has to be gradually acquired, and which demands systematic arrangement. In art the child has to learn to observe form and colour and to reproduce them ; in music, he has to associate a set of symbols with the notes of the scale ; in literature, he has to read, to write, to spell, to express his thoughts in accordance with the rules of language.

In the learning of all these things final values predominate ; purpose is connected with them, and all that has already been said of final values applies to them. Neither in learning his notes, nor in drawing a group of models, nor in learning to write, spell, and read, is the pupil expressing his feelings : he is learning to master a set of tools which may, perhaps , later enable him to express them. The learner, meantime, has his own primitive modes of expressing his feelings, and most of them are not at all artistic. On the other hand, all these subjects have another function : they ought to train appreciation, and cultivate a love for what is beautiful in art, in music, and in literature. Here we have to do with immediate values in their purest form. The beautiful in all its forms is valuable just because it is beautiful, and for no other reason whatever. Art, music, and literature have been the vehicles of the beautiful in thought and feeling in all ages. All that has been preserved of them is the inheritance of the present generation. There is a world

of pure, ennobling pleasures in store for those who can make it their own. Training in these subjects has as its higher function to open the doors and lead the learner into possession of his inheritance. Here we have two quite distinct aims —the one the acquisition of technique, the other the training of appreciation. Hence arises the extreme importance, and at the same time the extreme difficulty, of treating these subjects aright.

What is to be the relation of these two aims to each other ? Can teaching of technique and training of appreciation go hand in hand ? Is learning of technique essential to appreciation ? These are important questions, but we cannot answer them : they would require one answer in music and another in art, and probably the third in literature. But in each the answer must be found if the subject is to receive proper treatment. One thing is perfectly certain. In practice the acquisition of technique, an end lower and more easily reached, is very apt to be pursued to the exclusion or to the serious detriment of the higher. A teacher is too prone, in giving attention to what he can teach directly, to neglect and leave no place for things that can be indirectly taught. Pressure of examinations and rivalry of other subjects for a place in curriculum tend in the same direction. Yet it is obviously disastrous so to force attention to technique as to breed disgust in these subjects. Many a child has lost all taste for literature owing to

injudicious forcing of spelling, grammar, and explanation of words ; for art owing to the freehand drawing ; and for music owing to scales. In all these subjects it is easy to overload first beginnings with such doses of dull routine as to stifle appreciation. It is often pleaded that appreciation in art, music, and literature is a late product in education, not to be expected before the close of adolescence. Only the exceptional pupil, it is said, is really capable of it, and hence it would be waste of time to endeavour to cultivate it in all pupils. Such a plea contains something that is true amid a great deal that is more than doubtful. If for a moment we leave literature on one side, it might with equal, if not greater, justice be urged in respect to art and music, that not one pupil in a hundred will be either an artist or a musician, and that it is, therefore, not worth while to waste time over the acquisition of technique.

Enough is not known of the changes which adolescence brings with it to say, with any certainty, what effect it has upon those parts of our emotional nature to which æsthetic values appeal. It appears, indeed, probable that the creative impulse in all the arts is in some obscure way connected with it, but further than this it is not possible to go. On the other hand, it is an established fact that the majority of young children between five and seven years old show already that liking for pictures, for music, and for literature, out of which appreciation may subsequently grow, provided

that suitable opportunity is given for its exercise.*

It is quite true that children cannot be said in the strict sense of the word to appreciate, for appreciation implies a great deal more than mere liking. It implies at the least a capacity of comparing a given experience with some ideal standard of merit and finding it either good or wanting. Liking is merely the starting-point, the raw material out of which the ideal standard is to be built. As to the method of building, it has been set forth in an ideal form by Plato in the 'Republic.' 'Young citizens must not be allowed to grow up among images of evil lest their souls assimilate the ugliness of their surroundings. Rather they should be like men living in a beautiful and healthy place. From everything that they see and hear loveliness, like a breeze, should pass into their souls and teach them, without their knowing it, the truth of which beauty is the manifestation.' It is not, indeed, yet possible to put this ideal method into practice in our schools, but it is quite possible to follow after it at a distance. We can see to it that some definite and generous place is found in curriculum from the earliest school age onward for the nurture of primitive likings in music, art, and literature, by providing things both good and beautiful for assimilation. We can only

* It is a deplorable fact that in many schools strings of authors' names, with dates attached to them and lists of works which neither teacher nor pupil have read, or are ever likely to read, are still considered as a course of instruction in English literature.

trust that the young mind will find in the good and the beautiful something akin to itself, and leave them to do their own work in the formation of the ideal standard. Our inherited wealth of beauty provides an ample store of things simple enough for the childish liking, and yet good enough for a high ideal standard. There is, indeed, every variety, every grade of choice, from what is well within the scope of a little child to what is quite beyond the average schoolboy. The one essential thing is to keep those periods set apart for the growing of æsthetic values as times when teacher and pupil enjoy themselves together. Final values with conscious and purposive learning and teaching are out of place there. Spelling, grammar, and derivations have no business to trespass on the time set apart for literature. Questions of technique do not arise, except in artists' minds, in understanding and enjoying a picture. The pleasure of singing a good song together or listening to good music of any kind is incompatible with practice in intervals or talks about keys and scales.

Success in fostering æsthetic values depends partly on a suitable selection of material, but much more on the teacher's sympathy and influence. During the first school period—*i.e.*, from six to twelve years of age—acquisition and technique and opportunity for appreciation are better kept quite separate. In the later period technique ought gradually to aid appreciation. When the pupil has got far enough to attempt to imitate the

beautiful, the difficulties which he meets with enhance respect for the great artist and his interest in the technique of art. No one, for example, who has never tried to write a sonnet really understands what a triumph of art a good sonnet is.*

Each emotion, as we have seen, however complex, is a response expressing the attitude of mind as a whole to some situation in environment as a whole. Each immediate value which a mind possesses is called forth by some particular aspect of a section of environment; each final value is relative to a purpose, and the purpose, with all the knowledge, great or small, that has gathered round it, is used to deal with or interpret some one and definite section of environment. All these are so far sectional; of course, in an abstract sense they are unified, as all of them belonging to one personality. But what influence brought to bear in education is to draw them all together and harmonize them in the service of one increasing and dominant purpose? How among all the values, immediate and final, which a mind inevitably acquires are the evil ones to be eliminated? Is experience itself to remain a tangled web, formless, inconsistent, and purposeless? While mind has acquired stable attitudes towards many separate situations, is it to remain

* Is it not curious that, whereas this writing in Latin and Greek verses has been so long practised, so little attempt is ever made to encourage pupils to write verse in English? Yet, whether the pupil is successful or not, the attempt is worth making, for it brings with it a respect for good poetry hardly obtainable without it.

with no stable attitude towards life as a whole ? People in past ages, left to their own guidance, have groped their way among these problems, and woefully stumbled in the answers they have found. It is part of our human nature to grope for an answer, and cling to a false one in default of the true one. Is the younger generation of to-day to be left to grope and stumble unguided ? Can the children in our schools be left to such guidance as the homes they come from afford them ? It would indeed be well for us as a nation if that were possible with safety. Even if they could, can the school, which, if there is any truth at all in this chapter, is a miniature society whose aim is to build a character, afford to deny a place to reverence ?

These are grave questions which still await an answer. One thing is absolutely certain : either in the school or in the home, or both, a place must be found for those quiet hours in which the truest springs of conduct receive their nurture. The duty imperatively presses upon each succeeding generation in any society of opening for its younger members the doors of that world of thought and feeling towards which reverence is a natural attitude, and of which worship is a natural expression.

Yet the unprejudiced observer—if, indeed, on the topic of the teaching of religion any unprejudiced observers are left—is obliged to insist that the home is the best and most natural place for early teaching, and the mother the best teacher. Religious values are a tender growth, and are jealously guarded, even

in early childhood, by a very salutary reserve. They only appear above the surface where affection has already established relations of exceptional intimacy. Such relationship is natural to the home, and in the nature of things of very rare occurrence in the school. The relationship between teacher and pupil in class is a formal one ; by mutual tacit agreement there are limits which both are expected to observe. What applies to all members of a class can be taught, but any introduction of a personal note is resented as a trespassing on forbidden ground. Probably every experienced teacher would agree that it does more harm than good to overstep these limits, which are well understood, but never defined. Within them a great deal of very valuable moral teaching is possible, but it is always non-personal. Moral ideas follow through the same steps as other ideas. They arise in perceptual process, and gradually extend their range from one narrow sphere of conduct to a wider one. The child's own conduct, be it good or bad, is always the starting-point ; but new meaning and widening application come from the observed conduct of others on which the child inevitably passes judgment from his own narrow point of view. The material used for the same end in school is of the same kind, only in school it is taken from a wider range—the lives and deeds, failings and virtues, of men of our own race and other races. Just in proportion as he understands and pictures the circumstances under which those lives were

lived, and the aims for which those men and women struggled and triumphed, or suffered, the child makes their lesson his own, and assimilates it with his own moral values. The teacher's task is to select material suitable to the pupil's age, and help him by question and explanation to understand it. Of teaching by example there is thus a very great deal, but of teaching by precept very little. For the knowledge of good and evil comes early, and is always far ahead of performance. Moral values find their expression and their test, not in words, but in conduct.

In a similar manner, both the home and the school may become a true training-ground of civic virtues. Both are miniature societies, and have their own citizenship, with its privileges and duties, and its demands for loyal service. By using the manifold opportunities which both afford, by learning such lessons of unselfishness, considerateness, and loyalty to the code of honour as both can teach, pupils prepare themselves in the only way possible at their age and likely to produce permanent effect upon their character for the wider citizenship to be conferred upon them later by the State.*

* See the most suggestive syllabuses for primary and secondary schools drawn up by the Moral Instruction League. The tendency of the average teacher is nearly always to overrate the amount of explanation needed. A child's insight into conduct and character is far keener and surer than is usually supposed. A moral lesson over-elaborated loses its force, and leads to indifference. Canon Skrine, in his delightful work 'Pastor Agnorum,' speaks of boys as morally colour-blind; that is certainly not the writer's experience.

CHAPTER X

SOME CONCLUSIONS

School only the beginning of training—Aims and limitations of the elementary school — Causes tending to depress the leaving age — The commercial instinct — The need for continuation schools and their function.

In the course of the preceding chapters some aspects of our problem which are of importance to the practical teacher as much as to the organizer of education have received rather incidental treatment. We have, in effect, throughout been viewing education as an attempt, by means of the direct and indirect, to develop and mould a growing will ; and no will is ever influenced except through values, final or immediate, which it either develops for itself out of its own instincts and impulses, or else derives and assimilates from its environment. The educator has first of all to secure proper scope for the play of instincts and impulses, to provide an artificial series of purposes by the performance of which ideas may grow into clearness and freedom. The work of teaching is direct, and attains its end through final

values. In the second place, the learner must be placed in a social environment—natural inasmuch as the learner's immediate values, so far as they are harmless, must find free play within it ; artificial inasmuch as it is shielded from external evil, and bars harmful growth by positive checks and penalties, while it encourages by a means both direct and indirect the growth of all values which are connected with what is innocent, good, or beautiful in life. It is quite obvious that in both these spheres of growth the school period can only be the beginning of things. The school cannot profess to do more than start under more or less favourable circumstances a process which ought to continue far on into life so far as intellectual learning is concerned, and in the moral sphere as long as life shall last ; for whereas the intellectual capacity of every mind has its limit, and in many cases a very low one, it would be unsafe to predicate any limit at all to the progress possible to every learner in the sphere of immediate values.

If our system of education were perfect, it would secure for each learner a schooling exactly as long and no longer than the particular mind of the learner made desirable. For each nature the school would be allowed time to do what it could in guiding early growth on right lines ; and as each learner reached his limit of benefiting by the school's artificial environment, he would pass on to the larger environment of life. We are, of course, very far from any such ideal. The length of a pupil's school life is determined in

the vast majority of cases by causes social, political, financial, and economic, which have nothing to do with the pupil's capacity or lack of capacity to benefit by the schooling received. At one end of the scale we have children removed from school just as the use of teaching to them is beginning, and long before they have derived the full benefit which schooling can confer ; at the other, we have the higher grade of education crowded by pupils and students, capable, indeed, of benefiting from the indirect influences of a school's social life, but incapable of deriving full profit from its direct teaching. It may be doubted whether the presence of such pupils is not a positive harm to our institutions, for they introduce into social and moral tone an element of leisured and graceful idleness and luxury which is not conducive to that atmosphere of learning which in higher educational institutions ought to prevail. There are many in the lower ranks of the social scale forced into life and work at the age of thirteen or under, who might well rise to the higher ranks of learning ; while some at least from the upper ranks who will never be fitted to be more than labourers yet stay on at school to seventeen or more, to their own and the school's disadvantage. The social and economic pressure which drives children early into work varies much in different parts of the country, and is highest in large manufacturing centres. In some of these it is rare to find any boys or girls, except those who intend to become teachers, whose parents are willing to keep them at school even up

to the age of fifteen.* These are facts which have to be accepted ; if they change at all, they are likely to change extremely slowly. The vast majority must inevitably leave school at an age when it is not possible to judge whether or not they are fit to benefit by further schooling ; for, as we have already seen, even apparently backward children often develop very fast in directions which make them suited for academic teaching after the age of adolescence has set in.

The state of affairs thus sketched would seem most discouraging but for a fact which educational enthusiasts are very prone to overlook. Incapacity to benefit further by school teaching does not at all involve incapacity for further mental growth. The central doctrine of these chapters has been the connexion of learning with purpose ; and whatever effort is made to make school environment natural, its purposes are always more or less artificial. They form a system the connexion of which with real life is seldom apparent to the pupil. He must accept them, if he accepts them at all, to a large extent on faith. They make a very large call on docility, a quality of which many strong natures have a very small store. To such natures a school becomes irksome, and its purposes trivial and useless ; school seems a backwater on the stream of life, and they long to be out in the main stream. As we have

* There are some industrial centres in the North of England where it is considered rather a disgrace than a privilege for a boy to be still at school at the age of sixteen.

seen, there are many natural springs of conation which the school can use to lead strength and reality to its work ; but there is one great set of impulses, one strong stream of conation, which from its very nature it is to a large extent precluded from using. For want of a better term, let us call this the commercial instinct, and understand it to include all the added strength of attractiveness which an end gains because it is seen for the moment to be the one thing which it will pay best to do. It is quite useless to deny the strength and prevalence of this instinct. It is probably stronger in the Anglo-Saxon race than in any other race, except, perhaps, the Jews, and is referred to sarcastically by foreign observers, who call us a nation of shopkeepers. We ourselves express the same fact in rather more flattering terms when we claim to be a practical people possessed of much worldly wisdom.

Probably this instinct has asserted itself in all ages early and strongly enough in the younger generation of our race ; but the competitive commercialism of our times tends both to enhance its strength and foster its very early growth in the young of to-day. When it has once shown itself in a pupil, especially if it be accompanied, as it often is, with some independence of character and backed by parental influence, it is in vain for the schoolmaster to attempt to fight against it ; the pupil's school-days are drawing to a close, and he would be better off in the wider stream of life. There is thus, both in the nature of our race and in the times in which

we live, a very strong force, which, quite apart from social considerations, tends to lower the school-leaving age.

The number of pupils willing to stay on till seventeen and eighteen would certainly be far less than is now the case were it not that the entrance to the higher professions—to the Church, the law, the teaching professions, and the medical profession—is jealously guarded by examinations demanding a somewhat advanced standard of general education.

To a certain extent, these facts are beginning to apply to girls as well as boys ; and if the employment of girls as clerks increases, girls' schools will feel their effect more than they have done hitherto. At present parents are far more willing to allow their girls to stay at school till sixteen or seventeen than their boys, in both industrial and agricultural areas : the great and increasing demand for women teachers makes it comparatively easy to secure a satisfactory proportion of pupils in the upper classes of a girls' secondary school. It appears to be certain that in the future the women of the higher artisan and lower middle classes will be very much better educated than the men.

The facts here briefly summarized have not so far been fairly faced, and their influence upon the primary and the secondary school has been wholly mischievous. The primary school has been attempting to perform at the same time two incompatible tasks. The first—the natural aim of all early school education—is to give to children of six and upward,

the length of whose school-days is as yet undetermined, a training suited to their age and capacity, with a view to fit them to be worthy citizens of the State, whatever be the calling or occupation they are destined later to follow. The whole organization of such a school should be determined by one aim—to do what is best for the child as a child, quite regardless of all questions of future occupation, and equally regardless of all class distinction and prejudices. Just in proportion as it fulfils its function, the school would become a national school in a true sense, and would be the best training-ground for rich and poor alike. There are parts of the country, especially in the rural districts and smaller towns of Scotland, where existing schools come very near to fulfilling this function. The second aim, which is lower, and has tended to distort the first and prevent its realization, has grown up partly by outside pressure upon the school to produce results unnatural to children, and partly because teachers, realizing that the vast majority of their pupils will receive no further schooling after the age of thirteen, or less, have attempted to drive home the elements of spelling, writing, and arithmetic in such a way that they could not possibly be forgotten.

There is a kind of external pressure from which, as a matter of course, the school has to be protected. There are always faddists eager to regard it as a suitable field for the trial of some new social panacea, eager to inoculate the mind with some quack vaccine which is to protect it against a temptation to which

it may in years to come be subjected. Teaching aiming at explaining the proper care and treatment for infants, the dangers of alcohol, the inflammability of flannelette, the nourishing capacity of different foods, the dangers of explosion in the use of gas and paraffin—all these may conceivably have a place somewhere and at some time in a system of education, but certainly not in the primary school. Apart from such attempts to force new subjects upon attention, the commercial world exercises a direct influence on the teaching of normal school subjects. It wants boys and girls who can write a good hand and spell correctly, put together a business letter, tell at a moment's notice the price of, say, seventeen articles at sevenpence-halfpenny each, and show a dexterity and correctness in the manipulation of figures. Such demands, vaguely stated, have an air of reasonableness about them, and they coincide with the proper aim of the teacher —namely, to produce proficiency in the necessary subjects of curriculum. Yet they often really involve a kind of technical education, which, if the commercial world wants it, it ought to be willing to provide itself, and which is quite an unnatural product in a boy or girl of thirteen. A good deal depends upon the range of correctness and the amount of dexterity demanded. As to spelling, it is reasonable enough that a boy of thirteen should be expected to spell correctly the words which he uses himself or has often met with, and that beyond this he should know how to tackle the spelling of an un-

familiar word. Our irregular spelling is an educational misfortune, and anyhow involves considerable expenditure of time on details of very small educational value, and is a serious handicap to the children of our race. To obtain a mastery of it by the age of thirteen is an impossibility with many children, however much attention is devoted to it ; and in those cases when it is a possible aim, a long price has to be paid for it in time, which can ill be spared, expended on work at a very low plane. Similarly, in composition it is reasonable that a boy or girl should be able to express his own thoughts clearly and grammatically, and that he should have a fairly wide range of thought to express ; but he cannot be expected to think in the jargon of business correspondence. In arithmetic it is, indeed, possible to produce a ready reckoner by the age of thirteen, but the child does not learn arithmetic merely in order to be a clerk. The manipulation of figures in the simple processes of multiplication, division, and addition may become automatic by endless practice ; but wherever automatic dexterity is directly aimed at, the process of work must needs sink below an intelligent level, and the child is in danger of paying for his dexterity by a loss of intelligence. Thus, the very natural desire of the teacher to produce a permanent result in the main branches of curriculum tends in most cases to a narrow curriculum and mechanical work within it.

Permanency of attainment in reading, writing,

spelling, and ciphering may be secured in two very different ways. The one, the lowest road of learning, need involve no processes higher than imitation and the acquirement of perceptual trains of more or less complication. By continued practice they may be rendered fairly permanent ; their duration depends on retentiveness, and on nothing else. The mind is not necessarily more efficient for all its learning than it would have been had the subjects taken been all of a purely manual nature. It has lost, not gained, in the process, because learning at a low level has probably become an indelible habit. If in some primary schools, when classes are unmanageably large and teachers untrained, and the children's minds perhaps dulled with premature schooling, work approaches this deplorable level, we should rather blame our own shortsightedness than the teachers. The other means of securing permanency of result involves, perhaps, though not necessarily, work which is less mechanically perfect ; but to compensate for that, some eagerness to read and some idea of what to read, some facility in using writing and spelling to express the writer's own thought, some understanding of what the elementary processes of mathematics mean, and some ability to use them intelligently. As an education, such learning lays no claim to completeness. Probably no serious thinker of the present day would hold that it is either possible or desirable to try to make our primary system complete in itself. Just in proportion as the primary school does its work properly, it

must reach out towards and presuppose a further education, which is to carry it at least one stage further. This conclusion becomes inevitable when we remember, on the one hand, that much of the time in the childhood period of education has to be spent in the acquisition of arts, of little value in themselves, but of great value because of what they may lead to ; and, on the other hand, that two great sets of instincts—the higher social instincts and the commercial instincts—which ought to become centres round which ideas will gather, are only just beginning to dawn at the close of the primary school period.

There does not appear to be much hope in the near future of extending the compulsory school age beyond its present limit, for we are as yet far from having made even that limit a reality. The only alternative left is to ensure an opportunity of further education for the vast majority, who must take up their work in life at the age of from thirteen to fourteen, by an extension and improvement of our system of continuation schools. The work done in some continuation schools at the present—and it is some of the most promising educational work done anywhere—even under the present discouraging circumstances, is an earnest of what may be expected of these schools if they are generously supported and properly organized in the future. It is not difficult to see in rough outline what form the continuation school of the future will take, for these outlines are suggested by the needs which it will have to meet

and the function which it will have to fulfil, and both of these are already plain.

1. It will find scope for the development of bodily growth, during the years when growth is most rapid, by organized physical exercises. It will be a gross mistake to confine the aim of this physical development to military ends ; it must be based on a wider foundation—namely, the need of the State for healthy, fully developed citizens.

2. It will continue without breach the work of the primary school in English and elementary mathematics, and provide, partly by reading, partly by ordinary classes, a course in history, geography, and civics, as a preparation for citizenship and for the appreciation of the vast opportunities and interests offered by that wider environment of leisure spoken of in the first chapter.

3. Whether the commercial instinct has already shown itself before the age of fourteen or not, it very soon asserts its strength when once a boy or girl is face to face with actual daily work. There is no daily work so humble, no employment so monotonous, as not to suggest some piece of knowledge, some line of study, which will lead to greater efficiency and advancement—which, in a word, appeals to the learner because ' it will pay.' It may be shorthand, book-keeping, typewriting, or a modern language, or manual work, or some branch of elementary science ; or, for girls, any of the branches of domestic economy or hygiene. Whatever these needs are—and they will vary in different localities—it

will be the function of the continuation school to take advantage of the energy which they beget, and fit on to them some one or two lines of study in which the pupil will work with zest just because of their strong final value. Instruction of this nature, without being technical education in the proper sense of the term, will form the best preparation for a technical course, which, if it comes at all, will come later.

4. The continuation school will aim at being a school in a true sense ; it will not be a congeries of detached classes, but a school of organized courses ; it will have a discipline of its own, and a corporate life of its own far more elastic in character than that of a secondary school, but yet strong and vital. It is universally recognized already that without a buoyant corporate life no secondary school can truly perform its function ; it is acknowledged also that the primary school cannot to the same extent, or in the same sense, develop corporate spirit, because the social instincts on which corporate spirit depends develop during adolescence. We shall come to realize that it is wasteful and unwise—nay, dangerous to society—to allow the social instincts of the great majority of the younger generation to run riot and disport themselves at haphazard during that adolescent period which is of crucial importance for the formation of character. The hooligan and young criminal are products of our present neglect, distorted and misguided results of natural forces in human nature which are the raw

material, out of which true citizens might be made. The continuation school of the future must find a place for the natural and healthy play of these instincts. It will have its recreative side, its societies, literary, dramatic, athletic, etc., some of which will be especially active during the summer months, when formal class instruction will cease for a time.

There are at least two obstacles in the way of realizing the ideal set forth above, the one financial, the other industrial. As to the former, we are already spending some twelve million pounds annually on primary education, the very aim of which is distorted because impossible results are expected of it. Are we to continue to deprive ourselves of the benefits which this enormous expenditure might confer on the community by refusing to establish a system which would be its natural completion, and leave it free to follow its true aim ? As to the latter, no system of continuation schools can ever be efficient unless time is secured to the learner to attend, and to have, when his day's work is over, sufficient surplus energy left to learn. No one acquainted with the scandalous abuse of adolescent labour at the present time can suppose this condition to be fulfilled. Nor is it likely to be secured until a limit of eight hours a day is set by law for all workers under seventeen in all forms of occupation (except, perhaps, in purely agricultural centres). The premature strain which long hours of work at present inflict upon adolescent boys and girls involves a

national loss of power and efficiency which is incalculable.

Our secondary school system is at present in the making. Until quite recently the provision for secondary education was universally acknowledged to be utterly inadequate to supply the need for it. Although the foregoing chapters have points of contact with the administrative side of a secondary school, it would not be possible in the space here available to follow them out ; nor is it easy during a period of very rapid growth to estimate how far the movement means a permanently increasing demand for secondary education and appreciation of its value. We must therefore leave on one side the many questions of interest which suggest themselves in this connexion. For similar reasons, we cannot attempt to deal with any of the many difficult problems which curriculum presents. Such connexion as the foregoing chapters have with curriculum has been indicated already in passing. It may, indeed, ultimately be possible to found a theory of curriculum upon results obtained by the genetic method which we have followed, but that is not yet possible.

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